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Newsprint Paper In Market of the World

Newsprint Association of Canada Issues Survey Containing Elaborate Statistics of World Supply and Demand — Market Has Changed Until Margin Between Supply and Demand Is Now Slightly Less Than in 1929.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, July 19, 1937.—The Newsprint Association of Canada has just issued a survey entitled "Newsprint in the World Market," containing the most elaborate statistics of world demand and supply of this commodity which have yet been published. It finds that where in 1935, when a previous survey was issued, there was a definite buyers' market for newsprint throughout the world, with a productive capacity well in excess of demand, there has since been a reaction, and the margin between supply and demand is now slightly less than in 1929. A synopsis preceding the tables says:

Demand

World demand reached its depression low in 1932 with total of 6,275,000 tons, a drop of over a million tons below 1929. Last year's total was 8,217,000. The 1937 total, on reports to date, is estimated as 8,875,000 tons, an increase over 1936 of 658,000 tons or 8 per cent.

This 1937 total exceeds 1929 by over 1,500,000 tons and is a recovery of 2,600,000 tons (40 per cent) from the 1932 low.

Outstanding feature of the upswing has been growth outside North America. While demand in United States last year was still less than in 1929, in the rest of the world it exceeded 1929 by over one million tons. United States now constitutes 45 per cent of the world market against 52 per cent in 1929 and 54 per cent in 1927. A large part of the 1937 increase, however, is in United States.

World consumption outlook is for continued growth. Per capita figures show some countries apparently near saturation but a large part of the world still with relatively low consumption due to illiteracy, undeveloped newspaper advertising and artificial restrictions of censorship and currency. Such countries represent large potential consumption. Japan, China, India and Latin-America appear to have entered a period of consumption growth similar to the 1919-1929 period in United States.

In United States, figures of newspaper circulation and advertising linage and expenditure provide a basis for calculation of consumption trend. Circulation is now highest on record but newspaper advertising is still distinctly below 1929 and has lost ground to radio and magazines.

Supply

World supply, or available capacity, has shown interesting changes since 1929. Main features are withdrawal of high-cost U. S. and German mills to the extent of some 675,000 tons, but substantial capacity increases in British Isles, France and other countries in the form of conversion mills. Depression conditions encouraged construction of conversion mills because imported pulp and wood, on which they depend, were cheaply available. Such mills showed capacity increase of at least 70,000 tons between 1930 and 1935, but the conditions which induced their expansion are now reversed.

Net change in world capacity since 1929 is estimated as an increase of 1,548,000 tons. Of this total, 925,000 tons occurred in the three years of 1930 to 1932. In the last five years the net increase has been only 623,000 tons.

Total world capacity available in 1937 is estimated as 9,160,000 tons. This means maximum possible production of 9,160,000 tons in 1937, assuming all available machines at continuous operation from January 1st. Some production time has been lost in the first six months, notably in France, and the 9,160,000 figure is consequently reduced to some extent. Actual 1937 maximum is now (June) probably little, if any, over 9,000,000 tons.

In 1938 some additional capacity will become available. The known net increase is 315,000 tons and there is estimated further possible increase of 170,000 tons. Total capacity available in 1938, or maximum possible production in 1938, is estimated as 9,500,000 tons.

Stocks of newsprint held by manufacturers and consumers are an element in 1938 supply. Demand in 1937 undoubtedly includes purchases in excess of 1937 consumption and extra inventories may be carried into 1938. Total visible stocks in North America on May 31st were 118,500 tons higher than a year ago and overseas stock may also increase. Stocks are, however, an extremely small percentage of world consumption, newsprint being unlike other commodities in this respect.

(Continued on page 26)

Gilbert Co. Celebrates 50th Anniversary

Executives of Large Paper Firms Throughout the Country Are Guests of the Company — Organize To Build Reservoirs and Dams On Fox and Wolf Rivers — W. H. Ryan Leaves Kimberly-Clark Co.—Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 19, 1937—Celebration of the fiftieth anniversary of the Gilbert Paper Company, Menasha, Wis., on Wednesday and Thursday of last week was made a notable event. The Gilbert mill started operations in November, 1887.

Sixty executives of large wholesale paper firms throughout the United States were guests of the company for the two-day period. Many of these firms have purchased paper from the Gilbert mill during its entire fifty years of progress.

On Wednesday morning, the visitors enjoyed a conducted tour of the Gilbert mill, followed by a luncheon at noon at the North Shore Country club. In the afternoon, they were entertained at golf and boatrides on Lake Winnebago. The evening was devoted to informal entertainment following a dinner, featuring the Master Singers of Chicago, a sextette directed by Jacques Hamier of Marquette University, and Tom Temple's orchestra.

A visit to the Institute of Paper Chemistry at Appleton, Wis. occupied Thursday morning, a luncheon was held at the golf club at noon, and the afternoon was devoted to recreation. The closing event was a dinner in the evening at the North Shore Country club. The speaker was Westbrook Steele, executive secretary of the Institute of Paper Chemistry, whose subject was "Technical Control in the Paper Industry."

Mr. Steele commented that the Gilbert Paper Company employed the first graduate of the Institute, and this year took another of its students.

As a memento of its fiftieth anniversary, the Gilbert company published an attractive booklet, "Fifty Years of Quality Control," setting forth the technical side of the industry, and tracing the manufacture of paper from the rag to the finished stage. The booklet is beautifully illustrated.

Present officers of the company are: A. C. Gilbert, president; George M. Gilbert, first vice-president; Frank J. Schneller, second vice-president, and T. M. Gilbert, secretary-treasurer.

Employees of the Gilbert mill enjoyed a week's vacation with pay, with the mill closed while they were away.

To Build Dams on Wolf and Fox Rivers

In an organized effort to build reservoirs and dams on both the Fox and Wolf Rivers with government aid as a means of conserving the water supply for power uses in the Fox River Valley and preventing spring floods, representatives of cities in the valley met last week at Oshkosh, Wis. They formed the Fox and Wolf River Improvement and Conservation Association, with Mayor C. A. Wiechering of Oshkosh, as president. Another meeting will be held at Kaukauna, Wis., July 26, to discuss steps to bring about the program.

The movement came about largely because the War Department issued an adverse report on the proposed project, which will cost more than a million dollars. The association expects to prove that the construction eventually will be paid for by the possibilities of developing electric power with the dams, while at the same time assuring a uniform water flow all year around for the paper mills and power plants which now must spend large sums during low stages for steam power.

W. H. Ryan Resigns

W. H. Ryan, who has been in the service of the Kimberly-Clark Corporation, Neenah, Wis. for 46 years, has tendered his resignation as director, general purchasing agent, and traffic manager. His resignation becomes effective at the convenience of the management.

Mr. Ryan's association with Kimberly-Clark dates from July 1, 1889, when he became a clerk at the company's Telulah mill at Appleton, Wis. In September, 1890, he elected to devote the ensuing two years to completion of his college education, after which he returned to the Telulah mill in his former occupation.

Three years later, Mr. Ryan was promoted to the position of office manager at the company's mill at Kimberly, Wis., where he served another three years. He then became manager of the Niagara, Wis. mill, where he remained for twenty years. The accumulated experience of these twenty-six years made him the logical choice for the office of general purchasing agent and traffic manager, functions which he has discharged for still another nineteen years.

Coincident with the announcement of Mr. Ryan's resignation, the management of the corporation announces the promotion of Lyall C. Stilp to the position of general purchasing agent, and W. K. Austin to the position of traffic manager.

Power for Menasha Products Division

Whether the Menasha Products division of the Marathon Paper Mills Company, Menasha, Wis., shall buy its $75,000 worth of power annually in the future from the Wisconsin Michigan Power Company or from the municipally owned utility of the City of Menasha is the question at stake in a hearing conducted at Madison, Wis. last week before the Wisconsin Public Service Commission.

The Menasha utility desires to install new steam generating equipment, either a $260,000 two thousand kilowatt plant to meet normal growth, or a $450,000 thirty-five hundred kilowatt plant to meet both normal growth and take on the Marathon company, which has a 1,500 demand and is now served by the Wisconsin Michigan Power company.

V. B. Wake, attorney for the private utility, contends Menasha's intention is a "raid" and is in violation of a contract between the two utilities by which the municipal plant was to serve only small customers. E. W. Forkin, attorney for the City of Menasha, countered that this contract expired September 7, 1927. He argued that the city has taken

on 16 large power users since 1927, and the Wisconsin Michigan Power Company did not see fit to object until the present application was made for new equipment.

Fred S. Hunt, chairman of the public service commission, instructed attorneys for each side to file briefs within ten days.

Kimberly-Clark Employees Meet

In further completion of an independent union of employees of the Kimberly, Wis. mill of the Kimberly-Clark Corporation, an election was held last week to choose ten committeemen from a slate of nominees chosen in previous balloting. Those elected to represent the employees of each department are Theodore Vanden Boogaard, H. J. Kokke, Harold Find, Martin Vanden Heuvel, Gertrude Albers, Otto Hammemann, Clarence Hooyman, Bernard Spaay, Oscar Kuehnl and Cornelius Kokke. There were 390 votes cast. This group will meet soon to name officers and a grievance committee.

A safety meeting of the Kimberly mill workers was held last week at which Walter Verhagen, of the warehouse department, was the speaker. He urged each one to make safety "a full time job," so as to cut down the law of averages which means one disabling accident among thirty-five persons annually. Safety prizes were awarded, a 60-piece set of dishes going to Richard Kilsdonk of the finishing room, and a pull up chair to John Vandenberg of the materials department.

Build Special Woodpulp Cars

[FROM OUR REGULAR CORRESPONDENT]

WAYCROSS, Ga., July 19, 1937.—More than 250 pulp cars, designed to transport pulp wood to the new pulp and paper mills of the southeast, have been built in the Atlantic Coast Line railroad shops in Waycross. The cars were designed by James Grant, superintendent of motive power for the southern division.

Work already has been launched on a second group of 250 cars, all of which will be completed in August. The cars are being turned out at an average of three a day.

Pulpwood formerly was shipped in box cars like any other staple commodity, but the new type car is built on the plan of the familiar flat car, with a low beam down the center length of the car and high posts at the end.

The pulp logs, four or five feet long, are stacked against the beam with the outer edge of the log higher than the inside end, giving a V-shape formation looking down the center from the end. When they reach their destination a grab is used to unload them with minimum effort and time.

Sonoco Products Co. Starts New Mill

The new mill of the Sonoco Products Company, at Garwood, N. J., started operation July 6, 1937. The new plant will make news board, chip board, jute liners, mist boards for folding boxes and paper for fire works manufacture. The plant will have a daily capacity of from 80,000 to 100,000 lbs.

E. M. Sligh is superintendent of the paper mill department.

Asks to Sell Patten Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 19, 1937—Apparent inability to obtain the consent of a sufficient number of creditors to the reorganization plan under section 77B of the federal bankruptcy laws is the reason advanced by Paul V. Cary as trustee to sell the assets of the Patten Paper Company, Ltd., Appleton, Wis., and wind up the business of the company.

Mr. Cary sought this permission when he appeared in the Eastern district United States court at Milwaukee Saturday of last week, and outlined to Judge F. A. Geiger the situation the company faces.

Operating losses of the company during April were $9,326 and during May, $4,022, the trustee told the court. This situation is due to higher prices of raw materials, higher wages and higher taxes. It has been necessary to borrow money, he said, to meet wage and raw materials outlays.

Quick assets of the company were given at $136,936, and quick liabilities, $101,299.

Mr. Cary stated that W. C. Wing (president of the Fox River Paper Company, Appleton) is the holder of a $75,000 mortgage on the company plant and is opposed to the reorganization plan recently submitted to the court in which there is provided an extension date for the maturity of the mortgage. The number of other creditors opposed to the plan was sufficiently large to prevent its being approved, the trustee said. He asked that he be allowed to execute orders on hand, use the raw materials and liquidate the business.

The mill was built by Azel W. Patten in 1881, and of recent years has been manufacturing rag and sulphite bonds, mimeograph and drawing papers and cover stocks. The present Patten Paper Company, Ltd. was organized February 16, 1882 by Azel W. Patten, whose associates were Thomas Patten, his son, and John McNaughton, his son-in-law. The senior Mr. Patten was active in the business until his death in January, 1902, and was succeeded by Mr. McNaughton. After the latter's death in 1910, Judson G. Rosebush became president of the firm and held that position until the receivership effected about a year ago.

Several years ago the company acquired the Outagamie Paper Company mill at Kaukauna, Wis., but it was shut down during the depression. Approval is now sought from the circuit court at Appleton, Wis. for the sale of the mill to the City of Kaukauna. The Kaukauna municipality was the successful bidder at a recent sheriff's sale of the property which it desired to acquire because of its valuable water power. The amount of the original judgment is $282,654.30, and the present total with fees and interest is $289,234.09. Application was made by the First Trust Company, Appleton, for confirmation of the sale by the court, as trustee of mortgage bonds.

Andrews Installs Silco Equipment

The Silco Pulp Products Company, 1836 Euclid avenue, Cleveland, Ohio, announces that it has signed its first contract with the O. B. Andrews Company, Chattanooga, Tenn., to install equipment to de-ink all grades of waste paper under its new process. The new plant will be in operation within the next sixty days and will be able to de-ink all grades of paper commercially at a low cost.

To Cut Waterway at Long Lac for Pulpwood

4,000,000 Cords To Be Carried From Long Lac Area To Lake Superior Near Which It is Expected That A Mill Will Be Built To Consume 65,000 Cords Per Year — Acer, McLernon, Ltd., To Handle Lake Sulphite.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., July 19, 1937—By arrangements between the government of Ontario and the Hydro-Electric Power Commission, a contract has been entered into with the Tomlinson Construction Company for the cutting of a waterway from the southern end of Long Lac, which lies to the east of Lake Nipigon, to Lake Superior. The cost of the work for which the company has contracted will be $687,000, it was announced this week by Hydro Chairman Stewart Lyon.

At the northern end of Long Lac the commission is constructing a dam, which will permit the flow of the waters of the lake and its tributary rivers either to Lake Superior and the St. Lawrence system or, as at present, to Hudson Bay by the Kenogami and Albany rivers.

The primary purpose is to provide for the passage of 4,000,000 cords of pulpwood from the Long Lac area to Superior. It is expected that a mill to be built near Lake Superior will consume over 65,000 cords a year, and that either on the Canadian or American side of the lake markets will be found for at least 100,000 cords additional yearly, according to Mr. Lyon.

The channel to be cut will pass through a number of small lakes and an existing waterway, which will be so improved as to permit the passage annually of about 250,000 cords of pulpwood. It is expected, when woods operations are begun, 1,500 men will be required during the cutting season, Mr. Lyon stated. The contractor for the waterway is under bond to complete it by June 1, 1938, so that it will be available for the passage of pulpwood cut during the winter of 1937-1938.

Government to Contribute $400,000

The Government is contributing $400,000 towards the cost of the diversion works. The balance will be paid by the Hydro which will, as a result of the diversion, add 1,250 c.f.s. of water to the flow of the St. Lawrence watershed. The water can be utilized at Sault Ste. Marie on its passage through the narrows there. It will be of value to the Commission in augmenting the available supply of water for power production at Niagara Falls, or, by way of the Welland canal, at Decew Falls, Mr. Lyon explained. It will add to the flow of the river in the international section of the St. Lawrence, where the proposed great canal and power works improvements have been planned. The water will also be available at the Beauhornois development near Montreal. The work now to be undertaken is of a nature similar to that which will be carried out on a larger scale when the waters of the Ogoki river, north of Lake Nipigon, are diverted into that lake and thence by the Nipigon river into Lake Superior. Surveys for the Ogoki development have already been made.

It is expected that the Ogoki diversion will add over 4,000 c.f.s. to the flow of water through the lake systems and by the St. Lawrence to the sea. The Long Lac diversion will provide an additional amount of water to pass over Niagara Falls equal to five-sevenths of the amount that at present passes over the American Falls at Niagara.

To Handle Sulphite Output

Acer, McLernon Ltd., Montreal, have been appointed sales agents for Lake Sulphite Pulp Company and orders for a substantial amount of the first year's output have already been booked. The prices at which the pulp will be delivered are not yet determined as contracts are written on the basis of the price prevailing at the time of delivery. Current contract prices for pulp of the grade to be manufactured by the company are approximately $68 a ton, ex-dock Atlantic ports, with indications that over $70 a ton will be the ruling price in 1938.

Meantime good progress is being made on the construction of the plant and other necessary buildings. Approximately three miles of railway siding have been completed into the camp. Excavation of the mill-site is well advanced and construction of mill buildings will commence within the next week or two.

Orders Placed for All Major Equipment

Orders have been placed for all the major items of equipment, including digesters, bleaching equipment and pulp drying equipment. Delivery of equipment has been promised in time to enable the mill to commence operations in March, 1938.

Funds required for the complete program have been provided. Although the first mortgage bonds have not yet been offered to the public, they have been underwritten by a group headed by R. O. Sweezey & Co. and arrangements have been made so that the proceeds will be available and construction not be hampered by lack of money.

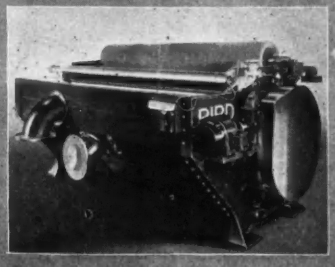
Starts Mill at Montville

[FROM OUR REGULAR CORRESPONDENT]

MONTVILLE, Conn., July 12, 1937.—After several weeks of general plant repairing and putting the paper machinery in excellent condition, the wheels of Montville's new paper mill commenced grinding out production this afternoon, says the *Bulletin* of Norwich, Conn., in a recent issue. Full production is expected to get under way within the next 10 days. The mill, known as the Red Mill, is the Montville Paper Company plant at Palmerton, that has been idle for about 15 years and was purchased by a New York concern May last. The mill was formerly owned by Robert C. Burchard. The plant has 15 workers on the payroll at present and new workers will be hired as soon as the production steps up. The mill is under the management of Frank Mousley, who at present resides in Norwich, a former superintendent of the Robert Gair plant.

THIS IS NO TIME TO FEED GOOD STOCK TO THE SEWER

BIRD MACHINE CO.
SOUTH WALPOLE
MASSACHUSETTS



Stock that's all ready to go on the paper machine costs too much to be wasted. Mills with Bird Save-Alls are way ahead of the game. They've paid for the recovery system in short order and now it's so much velvet.

Under today's conditions can you afford to be without this simple, efficient, low-cost Save-All? Why not write and get the facts and figures?

BIRD SAVE-ALL

YOU CAN MAKE MORE MONEY WITH NEW BIRD MACHINERY

Chicago Reports Stronger Market Trend

More Expensive Raw Materials and Other Factors Are Exported to Force Higher Market Conditions In Fall — Chicago Graphic Art Federation To Make Unique Exhibit At the Coliseum In September — Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., July 19, 1937—Chicago goes into the final two weeks of July with concrete evidence of further market strengthening materializing rapidly. Reports state that sulphite markets may see a resumption of the upward trend in the not-too-far-distant future. Other lines are also assembling gains and looking to the fall when resumption of heavy demand, plus higher costs of doing business will force higher market conditions to prevail. Virtually all raw materials now being used were bought at the higher market levels, a further fact contributing to the feeling now evidenced in Chicago.

Fine papers in general are in fair demand with orders steady and mills running about to capacity according to local reports. Krafts are continued strong while ground woods are credited with being the current front leader in reports of comparative improvement. Books had a good week while cover paper distributors here report anticipatory buying prior to expected higher price levels. The board market was reported steady. Waste papers were at near low levels as the general waste market was stagnant. Board and mixed waste papers were described as in this category.

To Make Unique Exhibit

A unique exhibit of interest to the paper industry is being sponsored by the Chicago Graphic Arts Federation in conjunction with the National Printing and Allied Industries Exposition to be held at the Coliseum, Chicago, on September 11 to 19. Under the direction of S. F. Beatty many exhibits of an instructive nature will be presented and consultants are to be present at each exhibit to advise printers, lithographers and others with respect to production problems, costs, keeping of records, paper requirements, management, etc. More than 17,000 announcements concerning the Exposition have been mailed out to the trade and Chicago is expected to be the hub of the graphic arts business during this particular week.

Buyers Strike Expected

Paper interests selling to the retail trade are certain to be interested in facts recently developed in Chicago which show that the consumer's ability to pay is going to be severely tested this fall and winter with price increases affecting nearly every item in the family budget. Prices of ladies' coats and tailored suits are expected to go up about 10 per cent while men's clothing will probably register a 12 per cent increase. Furniture is expected to be from 4 to 7 per cent higher while textiles and many houseware items are to range from 15 to 20 per cent in comparison with spring prices. Bread, butter, potatoes and other staples are also expected to be affected as retailers will be forced to pass on the higher labor and material costs. The higher prices are expected locally to result in either a milder form of buyer strikes or a tendency on the part of consumers to develop a more marked price consciousness and a more careful search for bargains. The tendencies noted and the results are, naturally, of more than ordinary interest to the paper supplying industry.

"The Informant"

The most recent issue of "The Informant," published by the Zellerbach Paper Company through the Midland Paper Company, local distributor, carries appropriate Fourth of July colors and a brief but explicit story of newsprint paper. The poster, sixth in the "Reminder Selling" series, pays tribute to the telephone industry while a bit of comment under the heading "Sales Ahead" carries suggestions, ideas about mail order cards and the production of useful dummies for sales work.

Fitchburg Paper Bans Closed Shop

FITCHBURG, Mass., July 19, 1937—The Fitchburg Paper Company last week inserted the following advertisement in local papers:

On Friday, July 9, 1937, the board of directors of the Fitchburg Paper Company empowered George R. Wallace, president and treasurer, to execute an agreement recognizing Fitchburg Local No. 12 of the International Brotherhood of Paper Makers as bargaining agent in their plants for the purpose of collective bargaining, in such form as Mr. Wallace might find satisfactory. The board was unanimously opposed to the company entering into any agreement which could later be used as a basis for compelling the company to discharge an employee who might be faithfully performing his duties because he was reported not to be in good union standing. The board was also of the opinion that the company should execute no agreement which by implication might in the future compel the company to deduct any sum from a pay check without the consent of the employee, except as required by law.

On behalf of the company Mr. Wallace has executed an agreement with the union, meeting the above requirements and providing as follows:

"The company recognizes the union, Fitchburg Local No. 12 International Brotherhood of Paper Makers as bargaining agent in their plant, for the purpose of collective bargaining. The company will encourage its permanent employees to join and maintain good standing in the union."

Strike Settled

As a result of the mediation of Premier Duplessis, the five-day strike in the plant of the Consolidated Paper Corporation at Three Rivers has been settled. The strike was the result of a demand for recognition by the company of the Brotherhood of Papermakers and the Brotherhood of Pulp, Sulphite and Paper Mill Workers. The company had an agreement with the National Catholic Labor Union, the members of which refused to join the strike, but were prevented from working by picketing. As a result of conferences the strikers agreed to go back to work and the question of union recognition will be discussed with the company later.

Fernandina Secures Another Large Pulp Mill

Fernandina Pulp & Paper Co., Organized By Interests of Rainier Pulp & Paper Co., Grays Harbor Pulp & Paper Co. and Olympic Forest Products Co. To Build Immediately $6,000,000 Plant — Mill To Start Aug. 1, 1938.

It was briefly announced in the PAPER TRADE JOURNAL last week that Fernandina Pulp and Paper Company had been organized by interests associated with Rainier Pulp and Paper Company, Grays Harbor Pulp and Paper Company and Olympic Forest Products Company and that construction of a 180-ton mill costing approximately $6,000,000 for the manufacture of woodpulp from southern pine would be started in Fernandina, Fla., immediately. It is expected that the mill will be completed so that operations can commence about August 1, 1938.

First Community to Secure Two Pulp Mills

Word of this announcement came from Warren T. White, general industrial agent of the Seaboard Air Line Railway, who has negotiated wtih interests associated with the above-mentioned companies for the past three years in an effort to secure the location of the new mill in Seaboard territory. In commenting on the successful culmination of negotiations for the location of the new mill at Fernandina, Mr. White stated that this marks one of the most important developments which has yet taken place in the South's rapidly growing pulp and paper industry. Fernandina is the first community so far to secure two large pulp developments. The wood supply in the surrounding territory is considered ample for the two mills. Other factors are considered as unusually favorable to the new enterprise. Representatives of the pulp and paper company are now in Fernandina making ready for starting construction on the new mill.

The selection of Fernandina as the location for the new mill came after several months of intensive negotiations conducted by Mr. White of the Seaboard and City Manager O. H. Anderson of Fernandina.

Reasons for Selecting Fernandina

The reasons given for the selection of Fernandina include: 1—Abundance of pulpwood which is particularly adapted to the process involved; 2—Ample water for processing; 3—Favorable situation for the disposal of waste; 4—Adequate transportation by rail, water and highway for the assembly of materials and shipments to consuming markets; 5—Favorable labor market; 6—Tax exemption under Florida laws; 7—Excellent climate and recreational facilities of Fernandina; 8—Suitable site on Amelia River; 9—Whole-hearted cooperation of the city manager, O. H. Anderson, whose efforts in behalf of Fernandina were responsible for securing the plant at that point.

The site for the new mill comprises 175 acres fronting 2,000 ft. on Amelia River, Fernandina's harbor. The site is served by Seaboard Air Line Railway.

Construction to Start at Once

Construction on the new mill is expected to start immediately. Employment will be given to several hundred men in the building of the plant. When completed, it will give employment to 400 men in the mill in addition to those engaged in wood cutting operations, hauling, etc. This development is expected to add greatly to the commercial life of northeast Florida and southeast Georgia.

The field of wood cellulose utilization has been widely expanded in recent years to include the production of a great variety of commercial products; and in view of the South's enormous forest resources, the value to this section of the new mill at Fernandina cannot be readily calculated.

Eighth Pulp Development on Seaboard

The new plant at Fernandina is the eighth large pulp development to be located on the Seaboard Air Line Railway in the past two years. For years the Seaboard's Industrial Department has made a concerted effort toward bringing about a realization of Fernandina's advantages for pulp and paper manufacture. The City of Fernandina through its commission and city manager, has cooperated to the fullest extent in this undertaking. During the period of negotiations with the West Coast interests, numerous shipments of wood were made for experimentation and research to determine the suitability of southern pine in the manufacture of the high grade product required.

It was stated that too much credit cannot be given City Manager Anderson for his untiring efforts in behalf of Fernandina throughout the period of negotiations with representatives of the pulp and paper company. Senator A. G. McArthur of Nassau County likewise rendered valuable assistance in supplying wood used for experimental purposes.

Kraft Corp. Also Building at Fernandina

The Kraft Corporation of America, subsidiary of the Container Corporation of America, has under construction a large pulp mill at Fernandina. The building of another $6,000,000 pulp mill will make Fernandina the most important pulp manufacturing center in the South.

Hampden Glazed Paper Employees Strike

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., July 20, 1937.—The employees of the Hampden Glazed Paper Company, a paper converting concern, about 175 strong went on strike yesterday morning because of refusal of the management to grant demands similar to those granted employees of the paper manufacturing concerns.

The company officials are ready to grant an increase in wages of eight cents an hour as was granted the employees of the paper mills but balked at recognition of the union, though in a modified form.

Francis J. Leary of Fitchburg, international organizer is in charge of the strike, Superintendent William J. Buss told newspaper men the concern was operating upon an abbreviated schedule. No conferences have as yet been arranged. Peaceful picketing without violence is going on at the mill entrances.

Woodlands Section Meets at Singer, Ont.

Summer Meeting Is Well Attended By Woodlands Managers of the Pulp and Paper Companies of Eastern Canada and New England — Special Attention In Papers Is Given to Problems of Destructive Insects and Fire.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., July 19, 1937.—The annual summer meeting of the Woodlands Section of the Canadian Pulp and Paper Association, held on Thursday and Friday last at Singer, Que., was well attended by foresters and woodlands managers of the pulp and paper companies of Eastern Canada and New England and representatives of the manufacturers of machinery used in forest operations. There were many instructive papers and a number of practical demonstrations of logging methods and the meeting proved highly successful. Singer is located some 50 miles north-east of Ottawa in the Valley of the Little Nation River, and the meeting was held there at the invitation of the Singer Manufacturing Company, which holds some 530 square miles of timber limits in this region. J. O. Wilson, of Quebec, chairman of the Section, presided, and the organization of the meeting was carried out by A. M. Koroloff, of Montreal, secretary-forester of the Section.

While numerous subjects pertaining to forestry were discussed, special attention was given to the problems of destructive insects and to fire prevention, also to hauling lumber and road construction.

Insect Pests

J. J. deGryse, of the Entomological Branch of the Department of Agriculture, Ottawa, gave a paper on destructive insects in the woods. He traced the history of the damage that had occurred in the past as a result of epidemics of these pests, and expressed the hope that soon a system of control would be organized that would render such disasters impossible. The new entomology, he said, was primarily the study of the origins and causes of these outbreaks. For years attempts had been made to develop a systematic "insect intelligence service," and considerable strides had already been made throughout the country; however the fullest co-operation of the public and the industry was necessary if the fight against such pests as the spruce saw-fly was to be successful. A number of species were becoming dangerous every day, he said, and if nothing was done would within five or ten years cause widespread destruction. A great difficulty was to educate the woodsmen to recognize such a danger when the first signs appeared.

Rene Gobeil, forest entomologist for the provincial Government, explained the growth of the newly-formed provincial service. Its main activity, he said, had been an endeavor to discover the damage done by the spruce saw-fly in the Gaspe peninsula. Parasites by the million were being bred to kill the fly, which in some districts had wiped out more than half of the standing timber; eradication was made all the more difficult because of the fact that the saw-fly was not a domestic insect, and hence its parasites had to be imported. At least 2,500 men throughout Canada were already helping in the study of forest insect life, he said.

Forest Management

A. M. Koroloff, in discussing the "woods end" of the industry, expressed the view that in the face of increasing local difficulties and foreign competition, the procuring of wood for the mills was becoming a problem of much greater importance. Companies were forced to go farther and farther to get their wood, and to meet the added cost involved have been forced to resort to new and ingenious logging methods. The section endeavored, he said, to study scientifically the methods available, as well as the best means of protecting the nation's forests from fire, fungi, and insects. Forest management also demanded a thorough knowledge of logging engineering, economics, and the nature of the lumberjacks if the competition of those countries that have learned to produce wood with the minimum of expense is to be met.

Logs and Logging

An account of three projects studied by the Forest Products Laboratories of the federal Government—wood as fuel, the rationalization of logging sleighs, and variation in the density of spruce and balsam—was presented by E. S. Fellows, W. E. Wakefield and J. D. Hale. Mr. Fellows reported that a greater and more efficient use of wood as fuel was especially desirable in Canada as it would create a wider market for hardwood, which as a result would have less opportunity of spreading and taking ground from more valuable species. Another factor to be considered, he said, was the large annual bill spent by Canada for various imported fuels. Mr. Wakefield stated that the laboratory had been carrying out a programme of experiments with a view to discovering a suitable type of all-steel sleigh that would in the future serve as a standard model.

Roads and Sleighs

R. S. Armitage, of Price Brothers & Co., gave a paper on developments in recent years in the use of trucks for hauling sleighs. Many areas had been successfully opened for operation by the use of trucks, he said, and hauling costs have been considerably lowered. Mr. Armitage stated that he believed the next serious step in decreasing both accidents and costs would be the introduction of an easily-moved mechanical loader for pulp logs.

P. V. LeMay, of the Canadian International Paper Company, read a paper on "Location and Construction of Portage Roads." Roads, he said, were the backbone of all forest management, and too seldom was sufficient care taken in choosing the type of road, and its location, that would allow for a reduction of portaging costs. Construction had improved considerably in the past few years, he said, and time and money had been saved with the introduction of machinery in the actual building and clearing.

Other papers which dealt with lumber hauling included: "New Uses for Tractors on Logging Operations," by W. J. Carson, of the Caterpillar Tractor

Company; "Hauling Price Derivation for Four-foot Wood, Horse Hauled," bv A. M. Jones, of the Anglo-Canadian Pulp and Paper Mills; "A New Method of Yarding Pulpwood," by Ernest Rand, of Cumberland Centre, Maine; and "Steel Bridges as Used on the Nepisiguit Portage Road," by G. D. Ellis, of the Bathurst Power and Paper Company. Mr. Ellis stated that in his experience steel bridges were more satisfactory than wooden, but it was pointed out by several of the members that creosote-treated wooden bridges frequently lasted as long as did steel bridges, and that wooden spans up to 180 feet in length had been built in Ontario and British Columbia.

It was announced that C. R. Townsend, of the Woodlands Section, was preparing a book on the development of truck use, which would shortly be published, following an investigation lasting for the past ten months. The general trend of merchandization in getting wood out of the forest was pointed out several times during the meetings. This was believed to be caused by higher labor costs, and, in some districts, a lowering of the efficiency of labor.

The following papers were also read to the delegates: "A Suggested Procedure for the Use of Vertical Aerial Photographs in Quebec Province," by F. R. Wilcox and F. Martineau of the Canadian International Paper Company; "Bundling Timber for Towing in Finland," by Lauri Kivinen; "Camp Estimates," by L. A. Nix of the Bathurst Power and Paper Company; "Sap Peeling of Pulpwood," by Chester W. Alden, of the Oxford Paper Company; "Mechanical Compilation of Scaling Records as Applied to Log Lengths," by L. L. Campbell, of Consolidated Paper Corporation; and "Southern Pine for Pulpwood," by W. P. Good, of the American Pulpwood Association.

During the meeting demonstrations were given of trucks for logging and hauling pulpwood, of power and hand tools, and of fire-fighting apparatus. A two-way radio telephone set was also demonstrated, this by the Canadian Marconi Company. The companies exhibiting and demonstrating their products included: International Harvester Company, the Ford Motor Company of Canada, General Motors of Canada, Canadian Ingersoll Rand, the Caterpillar-Tractor Company, Chrysler Corporation, Cleveland Tractor Company, the Delahey Export Company, the Dominion Logging Company, Mussens, Limited, Watson, Jack Company, Pulp and Paper Mills Accessories, Sandvik Canadian, Limited, Welland Vale Manufacturing Company, and H. V. Welles, Limited.

Another feature was a programme of moving pictures, dealing with logging operations in the Province of Quebec and in Bavaria, and with the automotive industry.

Sulphur Now Produced in Canada

Production of sulphur, which is used extensively in the manufacture of pulp, has been commenced by the Consolidated Mining and Smelting Company, according to an announcement made here. This commodity has not hitherto been produced in Canada, and imports have averaged 150,000 tons per annum. The first unit of the sulphur-producing plant, now in operation, has an output of 40 tons a day, and a second unit, now being completed, will be in operation shortly, bringing production to about 25,000 tons per year.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 21, 1937.—The Marquette Paper Company has been awarded the contract for furnishing the Government Printing Office with 38,420 pounds (170,000 sheets) of 24½ x 32½, 50 per cent rag, white index paper at 12.47 cents per pound. Also Barton Duer & Koch Paper Company will furnish 5,000 sheets of 22 x 28 red railroad board at $28.88 per M sheets. Bids for both of these items were received on July 2.

The Mathers-Lamm Paper Company will furnish 10,000 sheets of 24 x 36 white cloth lined paper at $112.00 per M sheets, bids for which were received on June 25.

The Printing Office has received the following bids for 9,900 pounds (75,000 sheets) of 50 per cent rag, white bond paper: Mount Holly Paper Company, 17 cents per pound; R. P. Andrews Paper Company, 21 cents; Barton, Duer & Koch Paper Company, 15 cents; Old Dominion Paper Company, 14.988 cents; and Aetna Paper Company, 15.97 cents.

For 46,000 sheets of white car sign boards: Stanford Paper Company, $33.50 per M sheets; Barton, Duer & Koch Paper Company, $32.85; Walker, Goulard, Plehn Company, $33.99; Reese & Reese, Inc., $34.00 and $30.00 and $24.10; Old Dominion Paper Company, $33.98; Virginia Paper Company, $33.69; R. P. Andrews Paper Company, $35.10; and Whitaker Paper Company, $34.13, $35.108, $34.03, and $33.11.

Plan to Reopen Chicoutimi Mill

MONTREAL, Que., July 19, 1937.—An announcement will be made shortly in connection with plans for reopening the Chicoutimi mill of the Quebec Pulp and Paper corporation, it was reported here today. Premier Duplessis, who announced some time ago that the provincial government would facilitate the reopening of this and two other mills, is understood to have at least three propositions in connection with the Chicoutimi mill and a decision may be reached shortly.

When the Chicoutimi mills were closed in 1930, they had a daily rated capacity of thirty short tons of ground wood pulp. One mill was destroyed by fire in 1935, the other has become obsolete, and it is estimated new machinery will involve $4,000,000 to $10,000,000, the amount depending on whether it is to be a ground wood pulp, sulphite, or newsprint operation.

A New du Pont Fast Blue

A new booklet defining the uses of Monastral Fast Blue BS, a product recently announced by the du Pont Company, has just been issued by the Dyestuffs Division of the Organic Chemicals Department. The booklet also tells in what forms the various types of Monastral Fast Blue are available.

The booklet treats of the uses of this new pigment in Printing Inks, Paint, Lacquer and Enamels, Wall Paper, Coated Paper, Paper, Coated Textiles, Leather Cloth, Cements for decorative purposes, Linoleum, Textiles and Rubber. In several instances samples of the use of the new shades are carried in the booklets.

Financial News of Pulp and Paper Industry

Crown Zellerbach Corp. and Subsidiaries Report Profit For Fiscal Year of $5,094,403 — St. Regis Paper Co. Shows Substantial Gains In Net Earnings For 1937 — Pejepscot Files Under National Bankruptcy Act.

New York Stock Exchange

High, Low and Last for the Week Ending July 21, 1937

	High	Low	Last
A. P. W. Paper Co.	7½	7½	7½
Armstrong Cork Co.	57¼	54⅜	56⅛
Celotex Corp.	43¾	41⅞	43⅜
Celotex Corp., pf.	78¼	77½	77½
Certain-Teed Products Corp.	14⅜	13	13¾
Certain-Teed Products Corp., pf.	56½	53	53⅛
Champion Paper & Fibre Co.	61	59	61
Champion Paper & Fibre Co., pf.	108	107½	108
Congoleum-Nairn Co.	38⅜	37¼	38¼
Container Corp. of Amer.	32⅜	31	32
Continental-Diamond Fibre Co.	20	19¾	19¾
Crown Zellerbach Co.	18¾	17⅝	18⅜
Crown Zellerbach Co., cum. pf.	97⅞	95¾	97⅞
Flintkote Co.	30¼	29	29
Robert Gair	15⅜	12¼	14¾
Robert Gair, pf.	38¼	36½	37½
International Paper & Power (a)	17⅞	16½	17½
International Paper & Power (b)	13	11¾	12⅜
International Paper & Power (c)	7	6½	6⅞
International Paper & Power, pf.	103	97	102
Johns-Manville Corp.	131¼	129	131
Johns-Manville Corp., pf.	125	124	125
Kimberly-Clark Corp.	40	38½	40
MacAndrews & Forbes	32	31¾	32
Masonite Corp.	56	56	56
Mead Corp.	30	29	29⅛
Mead Corp., pf.	96½	95	95
Paraffine Companies, Inc.	71½	69½	71
Paraffine Companies, Inc., pf.	100	100	100
Scott Paper Co.	40½	39	39¾
Sutherland Paper Co.	34	34	34
Union Bag & Paper Corp.	78	78	78
United Paperboard Co.	11½	10½	11⅛
U. S. Gypsum Co.	116	114½	115
U. S. Gypsum Co., pf.	162	162	162

New York Curb Exchange

High, Low and Last for the Week Ending July 21, 1937

	High	Low	Last
American Box Board Co.	21½	19⅛	20⅛
Brown Co., pf.	79	75¾	79
Great Northern Paper Co.	40	39½	39½
St. Regis Paper Co.	8¾	8	8⅜
St. Regis Paper Co., pf.	113½	110	110
Taggart Corp.	11	10¼	10½

Crown Zellerbach Earns $5,094,403

Crown Zellerbach Corporation and all subsidiaries report for the fiscal year ended April 30 consolidated net profit after surtax of $5,094,403, equal to $1.08 a share on the common after allowing for a full year's dividend requirements on the new cumulative convertible preferred. This compares with net profit of $4,565,127 in the preceding fiscal year.

Last March Crown Willamette Paper Company of Delaware was merged into and all its properties and other assets distributed to Crown Zellerbach Corporation. The report for the fiscal year ended April 30 covers the operations of Crown Zellerbach and all subsidiaries, instead of only the wholly-owned subsidiaries, as heretofore.

As of April 30, consolidated current assets of Crown Zellerbach totaled $22,822,646, or about two and a third times current liabilities of $9,618,358. Working capital totaled $13,204,288, against $13,666,643 as of April 30, 1936.

All outstanding Crown Zellerbach 6 per cent debentures, due March 1, 1940, of which $3,379,000 were outstanding on April 30, 1936, were redeemed during the year. Payment ot the major portion of these debentures was made from funds provided by a bank loan of $2,750,000.

All outstanding guaranteed 6 per cent mortgage bonds of Pacific Mills, Ltd., due 1935, of which $759,300 were outstanding on April 30, 1936, were also redeemed during the year. This redemption was financed by a bank loan of $750,000. Payments totaling $1,100,000 were made during the year on notes payable previously incurred in connection with the redemption of bonds and debentures.

The total, as of April 30, 1937, of bonds outstanding in the hands of the public and notes payable incurred in connection with the redemption of bonds and debentures was $21,227,500, against $22,964,800 as of April 30, 1936.

St. Regis Shows Good Increase

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., July 19, 1937.—Both the Taggart Brothers Corporation and the St. Regis Paper Company are showing increases in their gross business, and net earnings of the companies will probably be substantial during the present year, according to a leading official on his arrival here. He said that the outlook for the year is such as to warrant a substantial gain in the net earnings for 1937. The increase in the bag field gross business is running at the rate of 35 per cent more than a year ago and it is about 20 per cent ahead in the ground wood division. Prices have advanced approximately five per cent in the bag business and about 15 per cent in all other lines because of the higher prices for pulp and other raw materials as well as the increase in wages, according to the official. All mills of the concern are running at capacity with the exception of the Raymondville plant which will be placed in operation early in August after having been idle since 1932. At Tacoma, Wash., the St. Regis Kraft Company has reopened this year after a shutdown since 1930 and part of its output is used in the mills of Northern New York with the remaining tonnage being sold throughout this country and the Orient. The mill of Taggart Brothers is manufacturing between 35 and 40 million bags annually, and the size of the bags range from one and a half pounds to 98 pounds.

Soundview Pulp Co. Shows Gain

Scoring a substantial gain in earnings over the preceding month, Soundview Pulp Company operations for June resulted in a net profit of $165,256 after depreciation and normal Federal income taxes, but before deducting provision for any amount which may become due for surtaxes on undistributed earnings, the company reports. Operating results for the month include earnings for the Lyman Timber Company, a wholly owned subsidiary.

Earnings for the month compare with a net profit of $139,468 in May after depreciation and normal Federal income taxes, but before surtax provisions. The net in April amounted to $127,758.

The company's production and sales for June likewise increased materially over the preceding month. Production totaled 12,808 tons and sales amounted

to 10,168 tons, compared with production of 9,834 tons and sales of 9,423 tons in May.

Recently the company greatly increased its timber holdings through the purchase of three Snohomish county, Washington, logging firms by the Lyman Timber Company, and it is stated that the company now has an adequate supply of timber suitable for pulp making for many years.

Swedish Pulp Co. Makes Good Reports

The Swedish Pulp Company, leading wood pulp manufacturers in Europe, in its annual statement for 1936, just published, after writing off 1,500,000 kronor on the Östrand Mill and reserving 100,000 kronor for taxes, reports a net profit of 3,220,000 kronor, against 2,470,000 kronor in 1935. An amount of 3,890,000 kronor is placed at the disposal of the stockholders' meeting. The board proposes to appropriate 2,670,000 kronor for depreciation on stock and bond holdings, to reserve 400,000 kronor for a delcredere fund and to transfer the remainder, 820,000 kronor, to this year's profit and loss account. Among the plants operated by the Swedish Pulp Company is the above-mentioned Östrand pulp mill, which is the largest kraft pulp mill in the world, with a total annual capacity of 135,000 tons. The forest domains of the concern cover more than 5,000,000 acres, and its yearly output of pulp of various kinds is approximately 800,000 tons, besides 190,000 standards of lumber and considerable by-products.

Detroit Paper Products Offers Stock

The Detroit Paper Products Corporation is offering, by means of a prospectus, the unsold portion of 24,240 shares of $25 par value 6% cumulative convertible preferred stock, through Russell Maguire & Co., Inc., M. J. Hall & Co., Inc., and Weed, Hall, Berndt & Co. as principal underwriters, at $25 per share. Common stockholders of record June 25, 1937, have been given the prior right to subscribe to the preferred shares at $25 per share, for a period of 11 days following the effective date of the registration statement at the rate of not less than one share of preferred for each 8.4 shares of common stock.

International Sulphur Co. Organizes

The International Sulphur Company, with executive offices in the Sharon Building, San Francisco, Cal., specializes on surface sulphur in bulk. The organization of this company, its plans and methods of business, both of sulphur deposits and selling sulphur in foreign countries, has taken extended research work for over a year. The officers of the company are as follows:—William D. Patterson, president; Alpheus L. Hanscome, vice-president; Randolph R. Nickerson, secretary; Charles S. Haley, chief of engineering staff, and Harold L. Hazen, consulting metallurgist.

Pejepscot Paper Co. Files Under 77-B

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Me., July 19, 1937—The Pejepscot Paper Company of Topsham, last week filed papers in Federal District Court seeking permission to reorganize under Section 77-B of the National Bankruptcy Act.

Obituary

Henry S. Demarest

Henry S. Demarest, manufacturer of mill supplies, died July 11th, at his home 164 Fulton avenue, Hempstead, L. I., after a long illness. He was 70 years old.

Mr. Demarest was president and treasurer of Green, Tweed & Co., 109 Duane street, New York, and was a director of the Union Ferry Company of New York and Brooklyn. He was born in Brooklyn, the son of Albert Alonzo and Constance Marie Eakin Demarest.

A vice-president of the Polish Chamber of Commerce, he was decorated by the Polish Government with the medal of the order of Polonia Restituta.

He was also a member of the Union League Club, Merchants Club, Export Managers Club, British Empire Chamber of Commerce, and the Huguenot Society.

George M. Wallace

[FROM OUR REGULAR CORRESPONDENT]

RENSSELAER, N. Y., July 19, 1937.—George M. Wallace, nationally known as a felt expert and designer for E. C. Huyck & Sons, died suddenly last week at his home. He was 66 years old. Death was caused by coronary thrombosis. He had been associated with the company for half a century, coming here from Canada when a young man. He practically grew up with the business and became prominent as a felt expert. He always maintained a keen interest in civic affairs and was also known for his charities. The survivors include his widow and a sister.

Albert P. Herrlinger

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, July 19, 1937—Albert P. Herrlinger, 62 years old, president of the Herrlinger Paper Company, Cincinnati, died Friday, following an illness of several months.

A brother, Edward Herrlinger, is president of the Gum Products Company of Troy, Ohio, near here.

Albert Herrlinger had been associated with the paper business for many years and was widely known in the trade, not only in the Miami Valley but throughout the country.

Miami Valley Labor Organizing

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, July 19, 1937—Labor organizations in the Miami Valley paper mill industry are progressing, union officials indicated this week, in announcing that the Aetna Paper Company of this city, had signed an agreement for unionization with the National Brotherhood of Paper Makers, an American Federation of Labor affiliate.

Announcement of the labor movement, to extend from Urbana to Cincinnati, and including all the paper-producing cities between those points, was made in Urbana by John W. Bailey, fourth vice-president of the Paper Makers' Brotherhood. Mr. Bailey was promoting the organization of labor at the Howard mills in Urbana. In Dayton, the Aetna Company supplies the extra quality paper for the International Envelope Company.

NEWSPRINT PAPER IN MARKET OF THE WORLD

(Continued from page 13)

The combined figures of world demand and supply, outlined above, give the following results:

In 1932, world demand was 1,044,000 tons below 1929 and capacity had increased 925,0000 tons. Margin between demand and supply in 1932 was thus almost two million tons greater than in 1929.

In 1937, estimated world demand is 1,556,000 tons above 1929 and capacity has increased 1,548,000 tons. Margin between demand and supply is thus almost exactly the same as in 1929.

The 1937 world margin between demand and available supply appears to be 125,000 to 285,000 tons, (1½ to 3 per cent) total available capacity being 9,000,000 to 9,160,000 tons and estimated demand being 8,875,000 tons.

The 1938 world margin between demand and supply depends on whether consumption continues upward and to what degree. Maximum possible production in 1938 will be about 9,500,000 tons. This appears to allow consumption increase in 1938 of 625,000 tons or 7 per cent. Consumption increase in 1937 over 1936 is 658,000 tons or 8 per cent, and in 1936 over 1935 was 589,000 tons or 7.7 per cent.

Some margin between world-wide supply and demand is, of course, essential to provide for production and shipping contingencies.

Future Supply

While the 1937 margin between world demand and supply appears to be the same as in 1929 (or slightly less), the 1937 situation differs from 1929 in several important respects. For example:

(a) In 1929 the world was on the edge of depression; in 1937 it is in recovery.

(b) In 1929 large blocks of new newsprint capacity were under construction or in prospect; in 1937 the new construction in sight is negligible.

(c) Since 1929, world consumption of wood pulp has increased by over 4 million tons a year, and wood resources of the north European countries have been tapped to an extent which indicates end of expansion there.

(d) Only one-quarter of this increase in world pulp consumption has been due to newsprint; the other 3 million tons' increase has been caused by growth of other pulp products, including important new commodities: building materials, containers, artificial textiles and plastics.

Future expansion of newsprint supply is therefore not only a matter of mill construction, as it was in 1925-1929, but of available wood and pulp supply in competition with other pulp products. There is no doubt as to ability of many existing mills to expand their capacities by speeding-up and plant improvements, when necessary expenditure is justified, and this potential capacity might be sufficient to obviate construction of new mills or machines for some time to come. The real future doubt appears to lie in the economics of obtaining or using wood pulp for newsprint in competition with the profit to be derived from other pulp products.

Present relationships between pulp, newsprint and other paper prices show that, although newsprint prices are advancing, prices of pulps and other papers have advanced more rapidly and that, at present, wood is more profitably used for products other than newsprint.

This situation indicates that, to induce any large extension of world newsprint supply, there must be either a rise in the world newsprint price level or a drop in prices of other pulp commodities sufficient to bring profit possibilities toward approximate equality.

Change in World Capacity

In a section dealing with the change in world capacity since 1929, the survey does not attempt to establish the total "rated capacity" but estimates the net change as follows:

Net Changes: 1930-1937; Short Tons, 000 omitted

	1930-1932	1933-1937	Total Net Change
Canada and Nfld.	560 increase	290 increase	850 increase
British Isles	100 increase	150 increase	250 increase
Scandinavia	125 increase	220 increase	345 increase
United States	150 *less*	415 *less*	565 *less*
France	150 increase	210 increase	360 increase
Germany	10 *less*	100 *less*	110 *less*
Russia	75 increase	148 increase	*223 increase
Japan	nil	125 increase	125 increase
All Others	75 increase	5 *less*	70 increase
World Total	925 increase	623 increase	1,548 increase

* The estimated increase in Russian capacity is a nominal estimate, reliable information not being available. Indications are that Russian consumption can absorb Russian production for the next several years at least.

In an estimate of maximum possible production in 1937, the following are given as reasonable estimates:

Country or Group	Maximum Possible Production in 1937
Canada	3,700,000
Newfoundland	360,000
Canada and Newfoundland	4,060,000
British Isles	1,010,000
Scandinavia	1,010,000
United States	980,000
Russia	*240,000
Other Europe	1,420,000
All Others	440,400
World Total	9,160,000

Dealing with world capacity available in 1938, the following table is presented as a rough approximation, the figures being in short tons:

Country or Group	Definite Changes from 1937	Further Possible Changes
Canada and Nfld.	240,000 increase	160,000 increase
British Isles	nil	negligible
Scandinavia	65,000 increase	negligible
United States	25,000 *less*	20,000 *less*
*Other Europe	15,000 increase	10,000 increase
All Others	20,000 increase	20,000 increase
World Total	315,000 increase	170,000 increase

Prices of Newsprint

The survey traces the price of newsprint per short ton, delivered at New York, from 1915, when it was $42 down to the announced price of $50 for the first six months of 1938. It shows a rise to $112.60 in 1920, dropping to $40 in 1934. Outside North America, it is stated that the price in Argentina, per metric ton, c.i.f. Buenos Aires, has risen £4.0.0 since January, 1937, and is now £13.15.0. In Australia the price quoted per long ton, c.i.f Australian ports is now quoted at £13.5.0, but a large part of tonnage for delivery in 1938 was booked in 1936 at £10.10.0.

In England contracts for 1937 and 1938 delivery have been made at £10.0.0 per long ton. The low-

est price now being quoted by Canadian mills for 1937 delivery is reported to be £11.15.0 English ports or about £12.15.0 delivered in London.

In the Orient Canadian prices for 1937 delivery to June have averaged $62 per long ton, c.i.f. Shanghai.

In Belgium recent quotations have ranged from £12.15.0 to over £13.0.0 per metric ton, while for deliveries to India for the first six months of 1938 Canadian mills are now selling at £14.10.0 per long ton, c.i.f. Bombay, compared with £11.10.0 a few weeks ago.

Newsprint and Pulp Prices

It is pointed out that the price of mechanical pulp has risen from $18 a ton in 1932 to $34.50 as at May 25th last, and the price of unbleached sulphite from $30 to $70.50, and that the price of newsprint has not yet responded to these two increases, the curious position now being that newsprint mills are able to get a larger cash return by selling their pulp separately than by converting it into newsprint at considerable additional cost.

Increases in the prices of other paper, notably craft, are noted. It is added that special factors have kept the newsprint price sharply out of line with the prices of other papers, and that in the past such discrepancies have never remained indefinitely, as they provide incentives to the shifting of machines to the most lucrative grades.

Hammond Bag Acquires I. P. Property

[FROM OUR REGULAR CORRESPONDENT]

WELLSBURG, W. Va., July 19, 1937.—T. H. Hammond, president of the Hammond Bag and Paper Company last week announced the purchase of the two-block long building formerly used to house the George and Sherrard Paper Company. The plant, covering 90,000 square feet of floor space, was purchased from the International Paper Company for an unannounced sum.

The building, a two-story stone structure parallels Charles Street from the middle of the 1500 block to Eighteenth Street and extends east almost a full block.

Built in 1910 the building was the home of the paper mill formerly operated by Samuel George and Tom Sherrard, both deceased. The International Paper Company acquired the property from George and Sherrard ten years ago at a reported price of $750,000 and installed machinery and made improvements at cost of an additional $1,000,000.

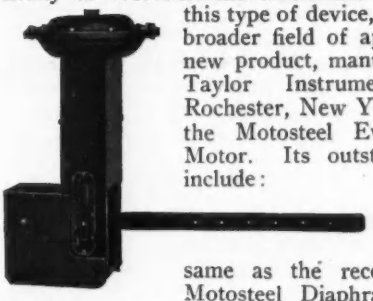
About five years ago the International company dismantled its plant and moved all machinery. The building has been empty during the intervening period.

According to officials of the Hammond company which was organized by T. H. Hammond, present head 12 years ago, the huge structure will be used for a warehouse at present. Later when plans of the company for expansion have been completed part of the building will be used as a mill. The remainder will be rented to small industries.

At present the Hammond mill occupies a large one-story building north of Twenty-second Street and running at capacity now, it employs 200 men and women.

A Versatile New Lever Motor

There is announced a new lever motor which is reported to have been designed and constructed specifically to overcome the traditional shortcomings of this type of device, giving it a much broader field of application. This new product, manufactured by the Taylor Instrument Companies, Rochester, New York, is known as the Motosteel Evenaction Lever Motor. Its outstanding features include:



All-steel welded construction — same as the recently announced Motosteel Diaphragm Valve—for maximum strength, lightness of weight, and permanency of alignment.

Precision operation characteristics which insure a uniform relation between the air pressure applied to its diaphragm motor and the resulting lever travel through its stroke.

Practically free from hysteresis: A deeper diaphragm with larger area gives greater power and smoothly modulated action. Ball bearing roller bearings guide the full stroke of the push rod. The lever is pivoted in phosphor-bronze bushings which are alignment-reamed in same manner as automobile engine bearings.

A number of take-off holes are provided throughout the length of the lever so that the force or travel of the motor may be adjusted.

Power of either up-stroke or down-stroke can be increased or decreased by spring adjusting nut.

The lever action can be reversed by substituting another lever and transposing the fixed and movable pivots.

Limit stops are provided for both up-stroke and down-stroke.

Base is drilled for mounting on floor, wall or ceiling, making possible an infinite number of mounting positions. Works equally well in all positions.

Three sizes of lever motors; in terms of maximum damper areas which can be accurately positioned—25 square feet, 50 square feet, 120 square feet. When the Taylor Valv-Precisor or Dubl-Response Control Unit is operated in conjunction with any of these three motors, these damper areas may be increased appreciably.

May be operated by remote manual control, by an electro-pneumatic switch, or by a pneumatically operated controller. It also may be operated in parallel with a diaphragm valve or other pneumatic equipment, if desired.

These design and operating features recommend this new lever motor for the operation of dampers, lever operated valves, butterfly valves, electrical rheostat for variable speed motors, for the control of electrical equipment, or for the operation of any device by the conversion of pneumatic energy to linear or angular mechanical motion.

Large Pulpwood Cut

From Fredericton, N. B., it is announced that this summer's cut of pulpwood in the forests of New Brunswick will be around 750,000 cords, the largest cut for many years.

Advances Made in the Manufacture of Wood Cellulose of High Purity and Its Expanding Uses for Rayon, Cellophane, Plastics, Etc.*

By R. S. Hatch[1]

First attempts to produce a synthetic fiber date back to 1884 when Count Hilaire de Chardonnet first successfully produced a fiber from nitro-cellulose. In 1889 the first commercial samples of Chardonnet's silk were placed on public exhibition. This synthetic fiber business has grown from a few thousand pounds produced in 1900 to 265,000,000 pounds in 1927, 350,000,000 pounds in 1928, and 2,000,000,000 pounds in 1936.

Initial production utilized cotton as raw material, then came the nitro-cellulose process, then the cupra-ammonium process of Despeisses, which also used cotton cellulose. Next was the viscose process in 1862 using as raw material special prepared chemical sulphite wood pulp, and in 1928 a total of 84 per cent of world production utilized the latter process with 9 per cent made by the Chardonnet, and 5 per cent by the Cupra-Ammonium, and 2 per cent by the then new cellulose acetate process, which up to the present time has again turned to cotton as its basic raw material.

Name Rayon Adopted in 1924

The generic name "Rayon" was adopted for synthetic fiber produced for cellulose in 1924 by American manufacturers, and in 1935 world consumption of wood pulp for the manufacture of viscose silk was 520,962 tons, of which the United States consumed 115,112 tons. In 1936 United States consumption of wood pulp had grown to 165,625 tons. Indications are that world consumption of wood pulp for production of synthetic fiber and films is increasing at the rate of 100,000 tons per year and this rate will probably be maintained for at least the next five years. It is thus evident that we are dealing with a vast industry, the size of which is little appreciated by the general public, which is responsible for employment of thousands of our population, and which places in the hands of the ultimate consumer a new product low enough in price to be within the reach of all and a powerful medium for the better enjoyment of life. It is not possible within the brief confines of a paper of this character to trace the entire chemical and mechanical development of the viscose and relative processes to their present state of perfection.

New Raw Material Enthusiastically Received

With the increasing demand for paper and the consequent increasing shortage of all kinds of cotton rags as raw materials, the paper makers of the world turned enthusiastically to the new chemical cellulose produced from wood. Cotton cellulose, when mercerized with 18 per cent of caustic soda and subsequently washed free of the sodium salt, loses very little in weight, while wood cellulose, on the other hand, is a mixture. Wood, according to species, contains varying amounts of alpha cellulose together with Hemi-celluloses, pentosans, lignin, resins and numerous water soluble substances closely allied to cellulose and the sugars. The main purpose of the chemical process for production of wood pulp for paper making purposes is to dissolve out the cementing materials which bind the cellulose fibers together to form the wood structure, leaving as the result of the pulping process a partially purified cellulose which can be utilized for the manufacture of a wide variety of papers the character of which depends, to a large extent, upon the type of purification to which a wood pulp is subjected after the pulping process.

While the paper maker is mainly concerned with the physical strength of the cellulose fiber itself and its purity, the manufacturer of synthetic fiber is more concerned with the chemical properties of the cellulose in wood pulp, and particularly in the uniformity of these chemical properties, for on this latter point depends the quality and uniformity of the finished synthetic fiber yarn.

More Drastic Pulping Process

When pulp manufacturers turned to the manufacture of pulp for rayon they found it necessary to use a more drastic pulping process which gave a lower lignin content in the unbleached pulp, and a lower mechanical fiber structure. Expressed in terms of chlorine requirements for bleaching, a given average paper making pulp in the unbleached condition will have a chlorine bleachability, or chlorine requirement, of 5 per cent to 6 per cent whereas, a pulp made from the same species of wood for rayon purposes will frequently have a chlorine requirement as low as 2¼ per cent together with a lowering of the over-all yield of unbleached pulp of 3 per cent or 6 per cent. In producing a pulp for paper making use the endeavor is to produce a cellulose with a high cupra-ammonium viscosity, while for rayon a pulp of comparatively low cupra-ammonium viscosity is sought, with particular desire to uniformity, as the aging process is a time-temperature reaction.

Influence on Alpha Cellulose Content

It has been found that the wood used especially for the manufacture of rayon pulp has some influence on its alpha cellulose content, assuming that about the same cooking process is used slow growing wood such as eastern spruce usually gives a pulp with an alpha content of 85 per cent to 87 per cent, the balance being beta and gamma cellulose. Western woods, on the other hand, such as west coast hemlock and western white fir, yield a rayon pulp of 89 per cent to 91 per cent alpha cellulose content. In

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* Delivered at the annual convention of the Canadian Chemical Association, Vancouver, B. C.

[1] Director of research, Wyerhaeuser Timber Co., Longview, Wash.

making viscose, the caustic soda with which the cellulose is first mercerized dissolves out the beta and gamma cellulose and consequently a pulp with low alpha cellulose content gives a lower yield of finished rayon than one with a higher alpha cellulose content. Some attempts have been made by the pulp manufacturers to remove, by various methods, the bulk of the beta and gamma cellulose. Up to the present time, however, this is not universally done, and the rayon manufacturers have standardized on pulp from certain species for their individual plants. One of the improvements in pulp manufacture for rayon purposes in the near future will probably be the production of a chemical cellulose of high alpha cellulose content, and by this, I mean about 96 per cent. Many laboratories are engaged in this work at the present time and a great improvement in the chemical purity of cellulose for rayon pulps is sure to follow.

There are certain species of wood, particularly those with high resin content such as the Southern pines, Douglas fir, Jack pine, etc., which do not lend themselves readily to the sulphite pulping process and are generally manufactured by the sulphate process. This process yields a very strong dark brown fiber which is very difficult to bleach but rapid advances are being made in the knowledge and technique of the sulphate process as well as in the bleaching of sulphate pulp, which will eventually, I feel sure, make this type of pulp a strong competitor of sulphite pulp for rayon manufacture.

Use of Acetate Process Increasing

Thus far, I have discussed the use of wood pulp for the viscose process only. The Chardonnet process has been entirely discontinued. The Cupra-Ammonium process is very small compared with the viscose process and is not increasing in volume. On the other hand the acetate process which produces the so-called celanese of commerce is increasing rapidly. So far, both the cupra-ammonium and the acetate processes have used cotton as a raw material almost exclusively. It is reported that some acetate fiber is being produced in England from wood pulp, but to the best of my knowledge, none has been produced in this country. One of the main difficulties in the use of wood pulp for this process is the physical form in which it is marketed. Pulp for both paper making and for the viscose process is produced in the form of heavy sheets which are well adapted to both uses. Machinery in the viscose process has been developed for the precise and efficient handling of pulp in sheets and the viscose manufacturers' only requirement is that these sheets be uniform in structure and thickness so that they will absorb the mercerizing solution evenly and uniformly. The acetate process is, of course, quite a different matter. Cotton cellulose is readily acetelated because of its open fluffy nature. Wood pulp, to be, as successfully acetelated must also be produced in a form that can readily be penetrated and surrounded by the acetelating solution. It must also be of high alpha content because the chemicals used for acetelating are expensive and are uselessly consumed in reaction with the hemi-cellulose. A considerable amount of work is now being done with the object of producing from wood a pulp of high alpha cellulose content and of a physical form which will acetelate readily.

Cellulose Plastics Industry

The cellulose plastics industry is much older than the synthetic fiber industry. Cellulose nitrate was first successfully converted into the plastic material known as celluloid in Newark, N. J., in 1869 by J. W. & I. S. Hyatt. Cotton has always been the universal raw material for the production of celluloid and the celluloid industry in a few short years grew into a tremendous business. Celluloid, however, had many disadvantages because of its ready inflammability. With the discovery and the perfecting of processes for the manufacture of cellulose acetate, a new field for the use of cellulose was opened up. According to the U. S. Bureau of Census figures, the production of cellulose nitrate in the United States in 1933 was 11,916,000 pounds and in 1936 it was 16,932,850 pounds, showing an increase of 42 per cent. The production of cellulose acetate in 1933 was 2,482,111 pounds and this had risen in 1936 to 13,036,497 pounds. An increase in the same period of 405 per cent. These figures are food for serious consideration and point very definitely to the desirability of producing a chemical pulp which will be entirely satisfactory for acetelation. This is by no means a simple task but when we reflect upon the advances which have been made in the production of chemical cellulose from wood for the rayon industry and the tremendous market which has been built up, we need have little fear of the ultimate successful production of wood pulp for acetelation.

Cellulose Ethers

Within the past year, cellulose ethers have begun to appear on the market. These products possess unusually interesting commercial possibilities and we may expect a rapid commercial development in this field. Both cotton and wood pulp have been used for making these products. Here again the question of chemical purity will probably influence the manufacturers' choice of raw material and any development which will lead to the production of a better cellulose for acetelation should be an equally valuable aid in producing pulp for the manufacture of cellulose ethers.

Waste Merchants Hold Outing

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 19, 1937.—The Philadelphia Waste Merchants Association held its annual outing on Thursday, July 15, at the Melrose Country Club, Elkins Park, Pa. Ninety members of the Association and their guests participated in baseball, golf, tennis, quoits and swimming. After partaking of a delightful luncheon at 12:30 a very interesting program had been arranged by the committee in charge of the outing, and there was an unanimity of opinion that a good time was had by all.

The scores were announced and awards made at the dinner which was held at 6 o'clock in the evening.

John Beichtman won the prize for points in baseball. The award was a handsome silver cup, suitably engraved.

Among the out-of-town guests was Albert Hicks of Daniel Hicks & Co., of New York.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Pulp and Paper Mills

General Construction News

Chicago, Ill.—The Central Waxed Paper Company, 5659 West Taylor street, manufacturer of waxed and other processed papers, has completed plans for new one-story and basement addition to plant, estimated to cost close to $45,000, with equipment. Bids are being asked on general contract and superstructure will begin soon. Shaw, Naess & Murphy, 80 East Jackson boulevard, Chicago, are architects.

Brooklyn, N. Y.—The Newport Folding Paper Box Corporation, recently organized with capital of 100 shares of stock, no par value, plans operation of local plant for the manufacture of a line of folding paper boxes and cartons, as well as other containers. New company is represented by Samuel Yudell, 8 West Fortieth street, New York, attorney.

Los Angeles, Cal.—The Charles R. Hadley Company, 330 North Los Angeles street, manufacturer of loose-leaf paper products and kindred specialties, has plans maturing for new plant unit at 312 North Los Angeles street, to be three-story, 55 x 120 feet, estimated to cost close to $70,000, including equipment. Large increase in present capacity will be carried out. Contract for erection will be awarded soon. Albert C. Martin, Higgins Building, Los Angeles, is architect.

Detroit, Mich.—The Wabash Fibre Box Company, 110 North Summit street, manufacturer of fiber boxes and containers, an Indiana corporation with headquarters at Terre Haute, Ind., has filed notice to operate in Michigan with capital of $150,000.

Arkadelphia, Ark.—McMillan & McMillan, Arkadelphia, are projecting plans for a new pulp and paper mill on large timberland acreage in Perry and Pulaski Counties, recently acquired, totaling close to 28,000 acres in all. Proposed mill will comprise several one and multi-story units, to be used for the production of kraft paper stocks, with power house, machine shop and other mechanical structures. Entire project is reported to cost in excess of $500,000.

Hoquiam, Wash.—The Grays Harbor Pulp and Paper Company has awarded general contract to S. S. Mullen, Hoquiam, for a new dock and warehouse building on waterfront at Aberdeen, Wash. Structure will be one-story and will be used for storage and distributing facilities in district noted. Project will cost about $40,000 and will be placed under way at once.

Boston, Mass.—Fire recently damaged a portion of plant of the Boston Fibre Corporation, 110 Tremont street, manufacturer of fiber products. An official estimate of loss has not been announced, but is reported as slight. The damage will be replaced.

Pearisburg, Va.—The new cellulose rayon mill to be constructed in Giles County near Pearisburg, on tract of about 1200 acres of land, recently acquired by the American Cellulose and Chemical Manufacturing Company, Ltd., 180 Madison avenue, New York, N. Y., as previously noted in these columns, will be a project of the Celanese Corporation of America, same adress, of which first mentioned company is a subsidiary. Preliminary plans are under way for plant, and time of beginning work on initial buildings will be determined soon. New mill will comprise a number of one and multi-story units and is reported to cost close to $5,000,000.

Jackson, Miss.—The Jackson Paper Company will begin work early in fall on new building at 197 North Gallatin street, where site was recently acquired, as previously noted in these columns. New unit will be used for storage and distribution, and is reported to cost close to $50,000, including equipment. Present building of company is at 120 South Gallatin street, H. T. Newell is president.

Seattle, Wash.—Western Containers, Inc., 4634 East Marginal Way, manufacturer of corrugated paper boxes and containers, has approved plans for new addition to plant, to be one-story, 75 x 240 feet, estimated to cost close to $45,000, including equipment. It will be used primarily for storage and distributing service. General contract has been awarded to the Austin Company, Dexter-Horton Building, Seattle, and work will be placed under way at once.

Hamilton, Ohio—The Beckett Paper Company, manufacturer of bond and writing paper stocks, paper specialties, etc., has preliminary plans under way for three new additions to mill on Buckeye street, each two-story, one unit to be used for general production, another for storage and distribution, and the third for office and operating service. Entire project is reported to cost over $75,000, including equipment.

Fort William, Ont.—Following recent reopening of its mill at Fort William, the Abitibi Power and Paper Company, Ltd., Toronto, Ont., has plans under way for expansion and improvements in plant, to include construction of new units and installation of machinery for increased output. Entire project is estimated to cost close to $1,000,000.

Dalhousie, N. B.—The New Brunswick International Paper Company, Dalhousie, has approved plans for new one-story addition to local mill, to be used primarily for storage and distributing service. Work is scheduled to begin early in August. New

structure is reported to cost over $70,000, including equipment.

Sydney, Australia—The Australian Paper Company, Ltd., is carrying out an expansion program at its Botany mills, to include the installation of a new machine for the production of heavy paper and board stocks. The unit has been built by Walmsley, Ltd., London, England, and is said to be the third largest machine of its kind in the world. It will be capable of producing wider paper board stock than has been made previously in Australia, and has a rated capacity for heavy paper stocks on a basis of 450 feet per minute.

New Companies

Los Angeles, Cal.—The Warnock Envelope Company, 417 Wall street, has filed notice of organization to manufacture and deal in envelopes and kindred paper products. New company is headed by J. B. Plotner, 713 West Seventy-ninth street, Los Angeles.

Brunswick, Me.—The Pejepscot Paper Company and the Androscoggin Water Power Company, Brunswick, affiliated interests, have filed petitions for reorganization with the United States District Court at Portland, Me., under Section 77-B of the Federal Bankruptcy Act. The primary reason for the reorganization is stated to be the heavy losses sustained by the companies during the floods in March 1936. The paper mills will continue operations pending the completion of the reorganization program, giving employment to more than 200 operatives. Edgar Rickard is president of both companies.

Paterson, N. J.—The National Scrap and Paper Stock Company has been incorporated with capital of $50,000, to deal in waste paper, etc. New company is represented by J. Lewis Abramowitz, 126 Market street, Paterson, attorney.

Detroit, Mich.—The National Automotive Fibres, Inc., 19925 Hoover street, manufacturer of fiber products, has arranged for change in company capitalization, converting the present 247,255 shares of Class A preferential stock into 494,510 shares of new common stock, on basis of two new common shares being exchanged for a single share of the Class A stock. The change will provide a fund of about $2,000,000 to be used for general financing, reserves, operations and expansion.

Independent Paper Mill Supply Formed

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, July 19, 1937—Incorporation papers have been granted in Columbus to the Independent Paper Mill Supply Company, a new industry located in Xenia, Ohio. The industry which came to Xenia through negotiations of the factory committee of the Retail Merchants' Association of that city, will occupy the warehouse building of the American Tobacco Company's properties on West Second street. Operations will start as soon as necessary improvements are completed.

The enterprise will afford employment to 125 persons, it is stated. It will engage in the processing of rags for supplying paper mills to be used in the manufacture of high grade papers.

The incorporators are Edwin N. Wirthlin, R. Edward Tepe and John A. Kiely of Cincinnati, who have been granted authority to issue 250 shares of stock of no par value.

A. E. McMaster Heads Nootka Products

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., July 16, 1937.—Appointment of A. E. McMaster to succeed the late George Whalen as head of the Nootka Wood Products Limited, large British Columbia lumber manufacturing company, has been announced.

Nootka Wood Products Limited is financed by powerful British interests, and while primarily a lumber manufacturing company, has extensive timber limits on the west coast of Vancouver Island, containing a large percentage of pulpwood, and has a large sawmill under construction at the present time. The company was extensively developed by the late Mr. Whalen prior to his recent sudden death.

Mr. McMaster, who has already assumed his new duties as managing director of the company, is one of the best known figures in the pulp and paper field of the Pacific Coast. For many years he was general manager of the Powell River Company. Since his resignation from this position some twelve months ago he has been engaged in industrial relations work in the province. He has always been optimistic regarding pulp and paper prospects in British Columbia, and will confine his interest to the west coast project of the Nootka organization. Plans in connection with pulp and paper development in this area are still indefinite, Mr. McMaster points out.

Germany Uses Less Bleached Sulphite

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 21, 1937—According to a decree of the Supervisory Board of the German paper industry, published in the official "Reichsanzeiger," 40 per cent of unbleached sulphite pulp is to be added to all "woodfree" writing paper as well as newsprint weighing 40 grams or more per square meter. This is according to a recent report from Assistant Commercial Attache R. M. Stephenson at Berlin. This measure also applies to all "woodfree" (without groundwood content), cardboard, the rate of 40 per cent being based on the total quantity of pulp used. If straw pulp is used instead of bleached wood pulp, the proportion of unbleached sulphite pulp to be added may be reduced to 30 per cent. The decree became effective June 27.

The purpose of these measures is to reduce the use of bleached sulphite cellulose of which there is a shortage in Germany and which is needed more and more for other purposes.

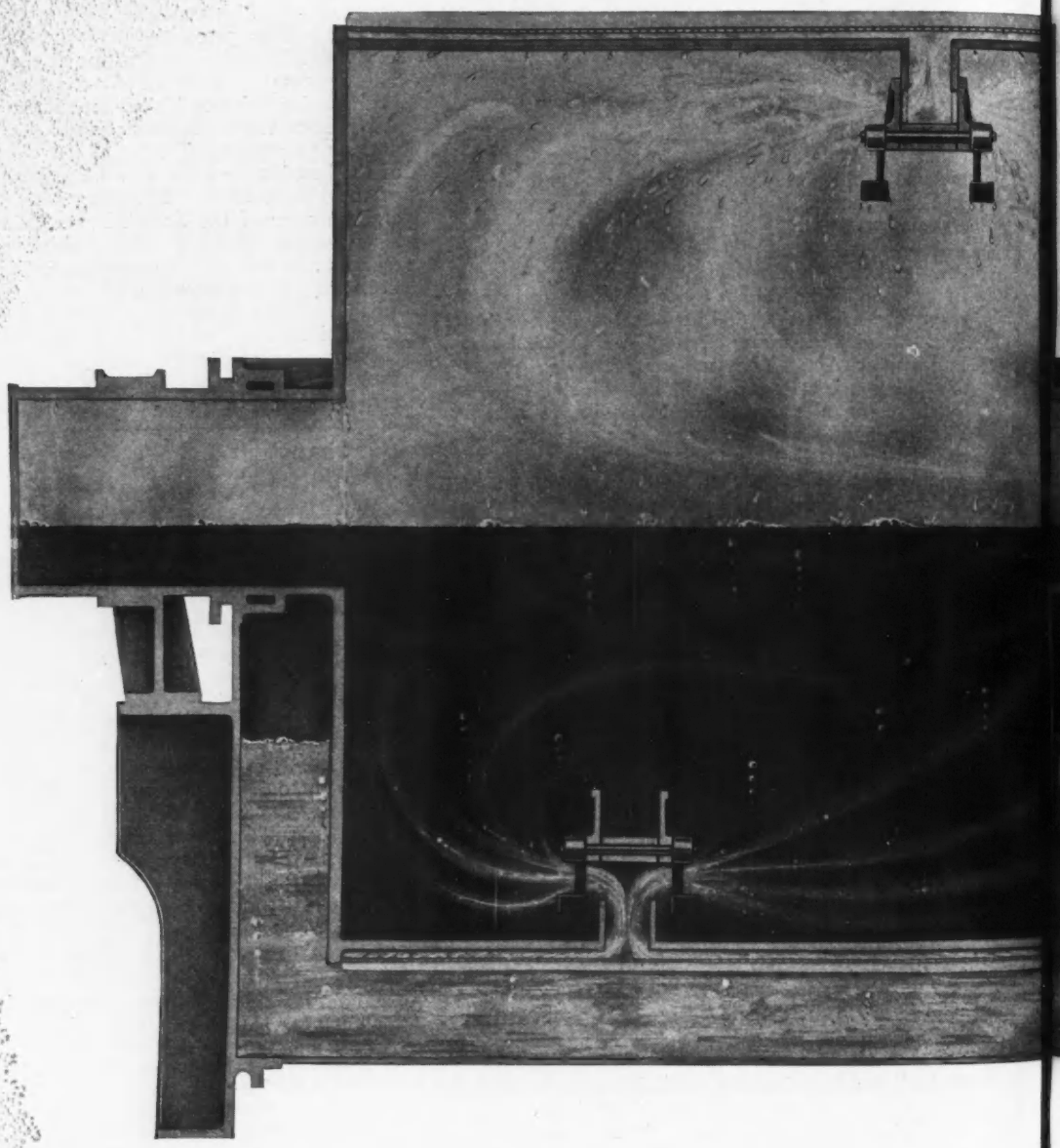
The above decree does not apply in case of export orders, but it is doubtful if German firms will be able to produce for export types differing from those for the local market.

Appointed Manager of Hudson Falls

[FROM OUR REGULAR CORRESPONDENT]

HUDSON FALLS, N. Y., July 19, 1937.—Announcement is made of the appointment of Karl R. Karlson, of Kaukauna, Wis., as resident manager of the local branch of the Union Bag and Paper Company to succeed Samuel L. Foster. The latter completed his duties this week. Mr. Karlson is a former resident of this place and was employed as an executive before being transferred to the Wisconsin mill. He is a former secretary of the local Chamber of Commerce. He was also connected with the management of the Kaukauna mill.

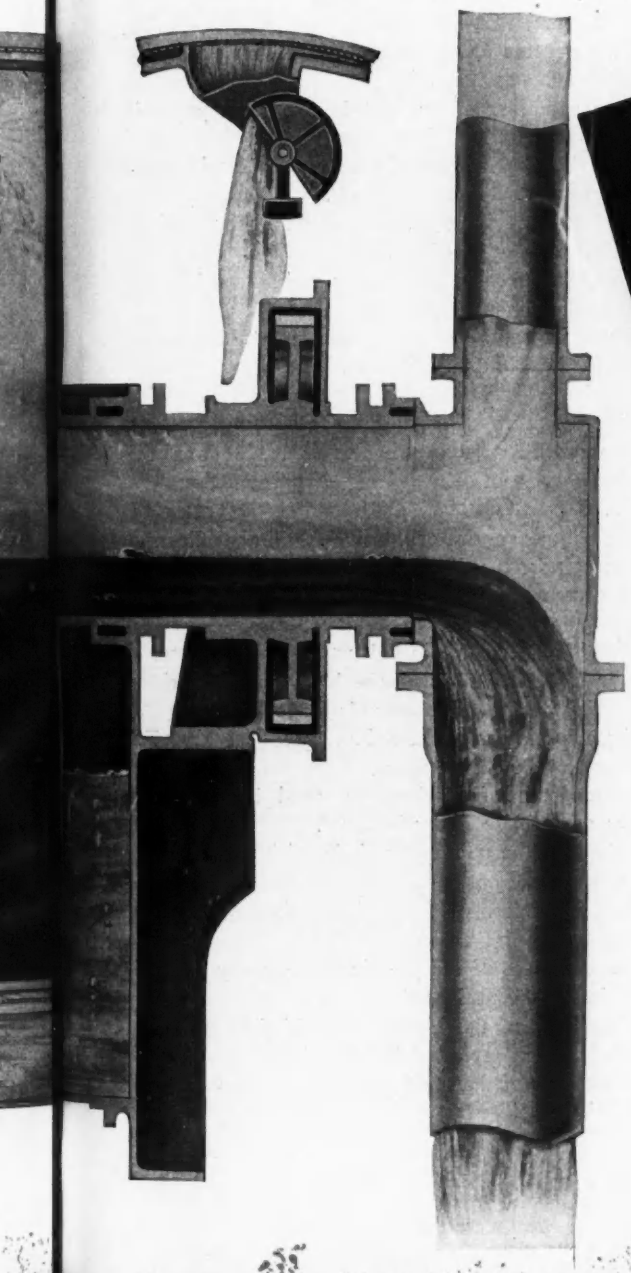
OLIVER



33 West 42nd St.,
New York, N. Y.

221 N. La Salle St.,
Chicago, Illinois

R YOUNG



The Key Unit in the OLIVER KRAFT WASHING SYSTEM

Results hitherto not even approached are being obtained with this System. The advantages of this counter-current wash of brownstock over other methods including diffusers are: an almost 100% elimination of foaming; very low salt cake loss; highly concentrated liquor to the evaporators; much shorter time interval between cooking and delivery of washed stock; low power costs.

This Oliver Washing System is now in successful use on hemlock, Oregon pine, spruce, balsam and southern jack pine. Its marked success is due largely to the unique design and operation of the Oliver-Young Filter. Note in the drawing showing the interior of this filter these three important features:

★ absence of solution channels with their customary restricting turns, both of which are a cause of foaming.

★ separation or rather non-mixing of air and filtrate in the drum; what little air that might be entrained in the filtrate is released in the drum.

★ free passage of filtrate and wash water, resulting in very high capacity and in effective and rapid wash.

When will it be convenient to have one of our engineers call to discuss the Oliver Kraft Washing System which is built around the Oliver-Young Filter?

OLIVER UNITED FILTERS INC.

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COMING EVENTS IN THE PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY—Fall Convention, DeSoto Hotel, Savannah, Ga., Oct. 18-20, 1937.

NEW ENGLAND SECTION, Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION, Technical Association of the Pulp and Paper Industry—Fourth Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION, Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION, Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park-American Hotel, Kalamazoo, Mich.

A NEW DARD HUNTER PAPER BOOK

"Chinese Ceremonial Paper" is a new volume from the pen of Mr. Dard Hunter, the well known authority on hand-made papers, of which only one hundred and twenty-five copies have been issued.

During several journeys to the Orient Mr. Hunter was permitted to see many hand-made paper mills in operation and some of these observations have been recorded in book form. The actual use of paper in the Orient, however, is a subject that has received but scant attention. In China, Indo-China, Siam and other Asiatic countries where Chinese people live and retain their old rites and customs, the author was privileged to witness many religious ceremonies in which paper plays a dominant part. Numerous examples of the sacred papers were collected and assembled. The present volume deals not only with the use of paper in Chinese sacrificial offerings, but a part of the book, with illustrations, is devoted to the making and decorating of the holy paper.

The illustrations consists of nine photogravures, two collotypes and five prints in color made from old wood blocks procured in China. Aside from the comprehensive illustrative material there are fifty original specimens of ceremonial paper gathered by the compiler in the Orient, including the following:

Bamboo paper, the K'ang Hsi period (1662-1723).

Bamboo paper, the Ch'ien Lung period (1736-1796).

Modern bamboo paper for burning at funerals.

Ceremonial tin foil paper before printing.

Ceremonial paper stained gold with *Saphora japonica.*

Three papers in gold and silver, representing riches.

Three specimens of fire paper used in Siam and China.

Two examples of burning paper from Yên-Thai and Lang-Buoi, the "paper villages" of Indo-China.

Specimens of "sycee" from Kwangtung and Fukien.

Two mantras (*wang shêng c'hien*) for burning before the ancestral portraits.

Two examples of the well-known *shou* paper in red and gold, printed from wood blocks.

Two sheets of white and yellow pierced coin paper for burning at the time of death.

An example of the common mock-money used by the lowly classes of China.

An elaborate ceremonial paper such as used by the Chinese population of Bangkok, Siam.

A printed sacrificial paper in use by the Chinese living in the Philippine Islands.

Two large specimens of paper *hua pao-fu* used for holding the ceremonial paper while burning.

Two mock-money burning trays made from the bamboo paper of Kwangtung Province, Southern China.

The obituary notice of a Chinese military officer, in red and black on yellow paper.

An ornamental burning envelope used by the Chinese population of Kedah, Malay States.

A wedding envelope in red, wood block printed.

Four large examples of the block printed *hsiang shên hsing san shou lu fu,* or planet gods paper.

Three specimens of the red and gold *Tao Tsu, Ts' ai Shen* and *Lu Shên* papers.

An example of mock-money used by the poor classes of Chinese living in Siam.

A sheet of the unique nine-hole spirit paper, made in Kwangtung from bamboo fibre.

Three specimens of the modern *hsiao chih ch' ien* as used in Northern China.

Two examples of the prosaic mock-money as used in Peking at the present time.

A specimen of the highly-ornate kitchen gods.

Two large examples of the ferocious gate gods.

An example of the small gate god and specimens of the block printed courtyard and room gods.

The number of copies in this edition has been determined by actual limitations and not through any desire to create a false rarity by unnecessary curtailment. The edition consists of only one hundred and twenty-five copies for the reason that a great number would have been impracticable. The edition of "Papermaking in Southern Siam," published in 1936 and necessarily limited to one hundred and fifteen copies, was heavily over-subscribed and many orders could not be filled.

The text of "Chinese Ceremonial Paper" is printed on paper made by hand in the Orient from the inner bark of the mulberry tree *(Broussonetia papyrifera)*; the photogravures and collotypes are imprinted on paper fabricated in the compiler's mill from linen and cotton. The books are permanently bound in stout boards with leather back and parchment corners. The cover papers are printed from the original wood block that was used in making the wall decorations for the private apartments of the last Emperor of China. The binding is the work of Mr. Peter Franck, Gaylordsville, Conn., who has bound the books from this press for twenty-two years.

The price of this work is $37.50 per copy.

"Behind the Scenes of Business"

The new 1937 edition of "Behind the Scenes of Business" by Roy A. Foulke, Dun & Bradstreet analyst, contains sixty sets of important balance sheet and operating ratios among manufacturers, wholesalers, and retailers, as against fifty-four lines covered in the previous edition. The ratios are the result of a comprehensive study of 47,980 balance sheets during the past five years. The tables are not only widely applied in business, but have been introduced in economic classes in leading American colleges and universities. A new feature of the appendix is a list of "Terms of Sale" in sixty lines of industry. The "Terms" are based on the examination of thousands of credit reports in the manufacturing, wholesaling, and retailing classifications in order to ascertain the prevalent and typical conditions of sale in current use.

New chapters in the current edition deal with effects of age, and over-expansion in business enterprises, and the imperative need for a personal "conscience" in the management of larger corporations. Mr. Foulke has pertinent remarks to offer on business prophets who are willing exponents of a wish fulfillment formula. Foulke denies that any individual can anticipate trends of the next year or next decade by the evidence now at hand. The best antidote for business conjecture is hard work, Foulke says, pointing to a group of companies who made money every year of the depression while concerns in similar lines were involved in serious losses or failure.

To Build Pulp Mill in Hawaii

Maui Agricultural Company, Ltd., through their agents, Alexander & Baldwin, Ltd., 215 Market street, San Francisco, Cal. early this year built a semi-commercial pulp and paper mill for the production of high grade alpha cellulose from bagasse, after several years of experimentation at their Paia mill. The complete pulp drying machine was furnished by the Pusey & Jones Corporation, vacuum washer and screens by Improved Paper Machinery Corporation, digesters and other equipment were designed and built in the Hawaiian Islands. The plant has been in successful operation for some time and plans are now being prepared for a complete commercial mill. Herman L. Joachim, consulting engineer, 215 Market street, San Francisco, Cal., is in charge.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES

Months	1937	1936	1935	1934
January	90.3%(c)	76.1%	65.8%	.....
February	90.1%(c)	77.9%	70.0%	.....
March	90.3%(c)	76.0%	70.5%	.....
April	92.1%(c)	82.3%	70.0%	.....
May	90.6%(c)	81.6%	69.4%	.....
June	87.5%(c)	80.7%	72.3%	.....
July	.....	77.3%	64.9%	.....
August	.....	81.5%	70.9%	.....
September	.....	80.5%	71.9%	58.2%
October	.....	87.6%	75.6%	64.7%
November	.....	88.0%	75.3%	61.7%
December	.....	85.9%	71.2%	59.6%
Year Average	.....	81.3%	70.5%	.....
Year to Date First 27 weeks	89.4%(c)	78.7%	68.8%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1937		CORRESPONDING WEEKS, 1936	
*June 5	85.4%	June 6	81.7%
*June 12	88.3%	June 13	81.1%
*June 19	89.2%	June 20	80.5%
*June 26	89.1%	June 27	79.4%
*July 3	85.8%	July 4	68.8%
*July 10	67.0%	July 11	75.6%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting, Current Weeks					
Ratio Limits	June 5, 1937	June 12, 1937	June 19, 1937	June 26, 1937	July 3, 1937	July 11, 1937
0% to 50%	56	52	51	44	55	64
51% to 100%	262	266	268	271	251	150
Total Mills Reporting	318	318	319	315	306	214

* Subject to revision until all reports are received.
(c) Basic capacity data have been adjusted to correspond with ratings reported on January 4, 1937 Machine Improvement Survey.

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours," were as follows:

Mos.	1937	1936	1935	1934	Mos.	1937	1936	1935	1934
Jan.	80%(e)	61%	61%	....	July	....	69%	59%	....
Feb.	86%(e)	67%	67%	....	Aug.	....	75%	65%	....
Mar.	87%(e)	68%	67%	....	Sept.	....	76%	69%	62%
Apr.	89%(e)	70%	61%	....	Oct.	....	82%	76%	63%
May	86%(e)	68%	61%	....	Nov.	....	79%	70%	56%
June	....	68%	65%	....	Dec.	....	74%	60%	52%

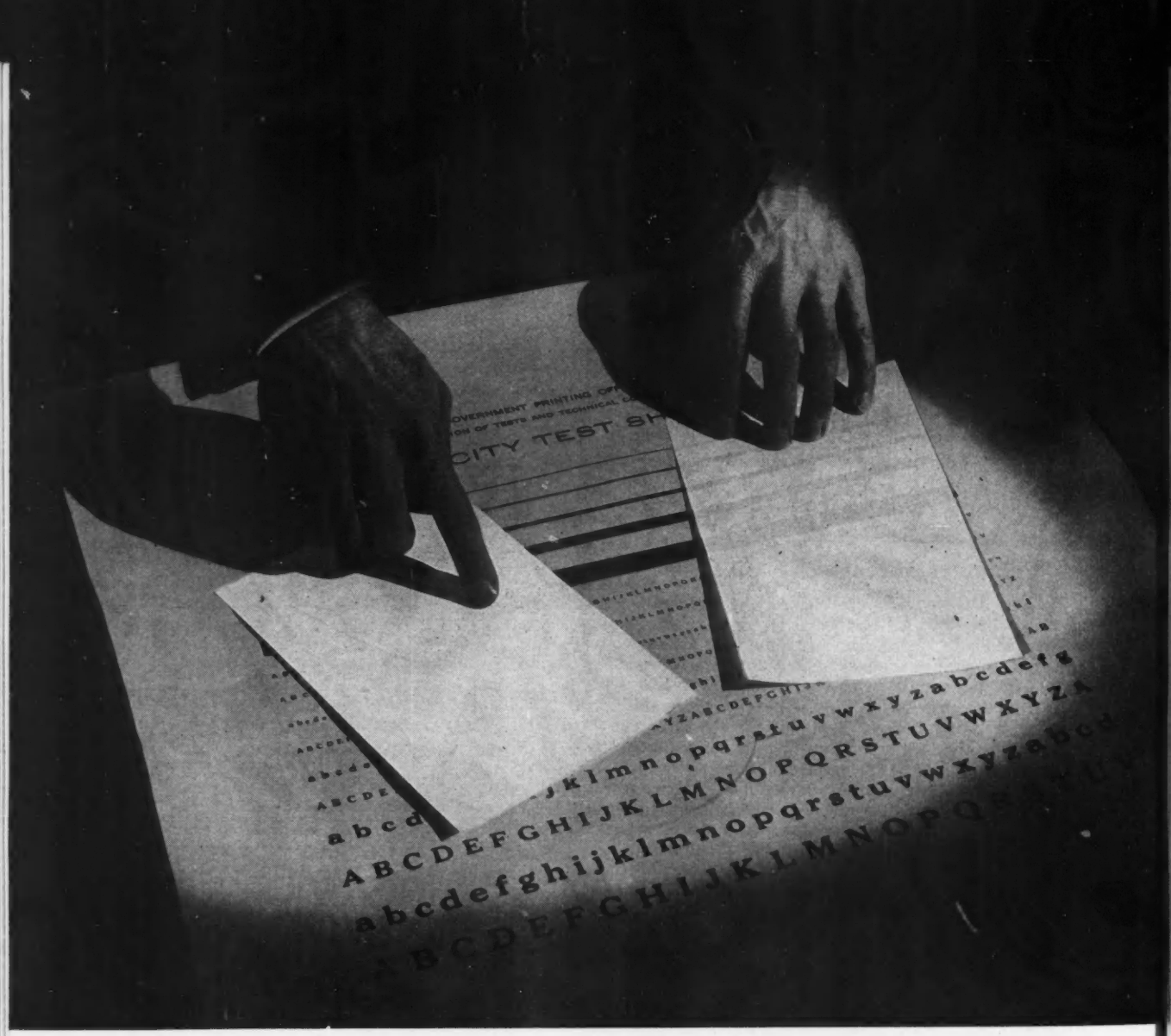
Week end. June 5, 1937—76%
Week end. June 12, 1937—82%
Week end. June 19, 1937—71%
Week end. June 26, 1937—79%
Week end. July 3, 1937—76%
Week end. July 10, 1937—44%

(e) Basic figures revised to include new members of the National Paperboard Association.

Newsprint Production Gains

Production of newsprint in Canada during June, 1937 amounted to 310,871 tons and shipments to 311,507 tons, according to the News Print Service Bureau. Production in the United States was 78,500 tons and shipments 76,255 tons, making a total United States and Canadian news print production of 389,371 tons and shipments of 387,762 tons. During June 29,812 tons of newsprint were made in Newfoundland, so that the total North American production for the month amounted to 419,183 tons. Total production in June, 1936 was 378,509 tons.

The Canadian mills produced 293,244 tons more in the first six months of 1937 than in the first six months of 1936, which was an increase of nineteen and seven tenths per cent. The output in the United States was 9,908 tons or two and two tenths per cent more than in the first six months of 1936, and in Newfoundland 24,435 tons or fifteen and eight tenths per cent more, making a total increase of 327,587 tons, or fifteen and six tenths per cent.



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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

The Solubility of Sulphur Dioxide in Calcium Bisulphite Solutions

By Frank H. Conrad[1] and W. L. Beuschlein[2]

This paper presents a method for ascertaining the solubility of sulphur dioxide in aqueous solutions of calcium bisulphite up to the saturation value. Recently data for the saturation values at 15 and 25 deg. C. have been made available by Conrad and Beuschlein *(2)*. An extrapolation of these data to other temperatures is suggested by making use of Duhring's Rule *(3)*. Data observed by the authors and calculated data at 35 and 50 deg. C. in saturated solutions for one atmosphere total pressure are presented. Data observed by Enkell *(4)* and Smith and Parkhurst *(9)* in unsaturated calcium bisulphite solutions are compared with those calculated by Duhring's Rule for various temperatures and pressures.

Enkell *(4)* has determined for the temperature range 40 to 90 deg. C., the solubility of sulphur dioxide in solutions unsaturated with calcium sulphite. Smith and

[1] Missouri School of Mines, Rolla, Mo.
[2] Dept. of Chemical Engineering, University of Washington, Seattle, Wash.

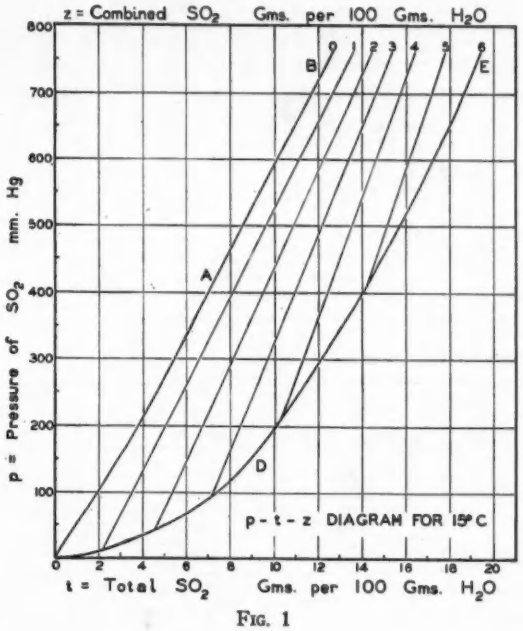

FIG. 1

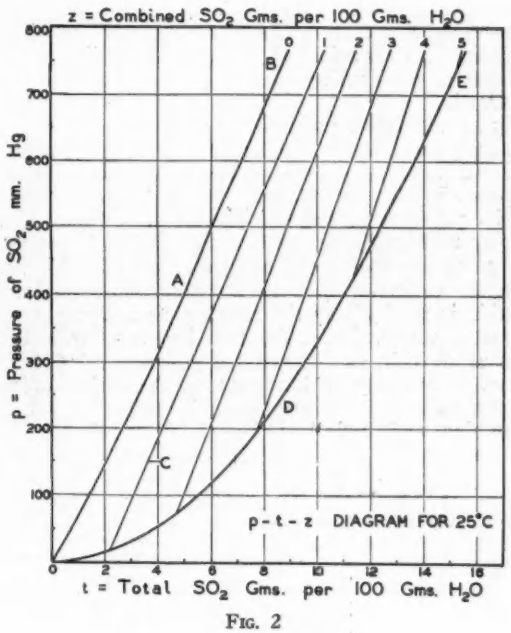

FIG. 2

Parkhurst *(9)* investigated the solubility of sulphur dioxide in suspensions of calcium hydroxide at 20 deg C. and in suspensions of calcium and magnesium hydroxides. Their study of the mixtures covered the ranges: for temperature, 5 to 60 deg. C., for alkali concentrations 0 to 1 N., and for the pressures 46.6 to 595.3 mm. Hg.

The diagrams, Figs. 1 and 2, present in graphical form the solubility of sulphur in aqueous solutions of calcium bisulphite at 15 and 25 deg. C. The curves ODE have been constructed using the equilibrium data of Conrad and Beuschlein *(2)* and give the solubility of total sulphur dioxide in aqueous solutions saturated with lime. The lines OAB are for the solubility of sulfur dioxide in water *(6, 8)*. The straight lines of positive slope represent constant values of combined sulphur dioxide or equivalent calcium bisulphite. These lines have been constructed upon the experimental work of Smith and Parkhurst *(9)* who show that the concentration of free sulphur dioxide or sulfurous acid in calcium and magnesium hydrogen sul-

TAPPI SECTION, PAGE 67

phite solutions is exactly and directly proportional to the partial pressure of sulphur dioxide above the solution at all temperatures, alkali concentrations and pressures within the range investigated. The results of these investigations may be written in the form:

$$p = k(t - 2z),$$

where, p = pressure of sulphur dioxide above the solution,
t = total sulphur dioxide in solution, grams per 100 grams of water,
z = combined sulphur dioxide as in calcium sulphite, grams per 100 grams of water,
$x = t - 2z$ = totally free sulphur dioxide in solution,*

* x represents the actually free SO_2 in solution and is not the "free sulphur dioxide" referred to in paper mill terminology. This latter is equal to $x + z$.

k = proportionality factor which is dependent upon temperature and combined sulphur dioxide.

For the use of this equation with coordinates representing pressure and total sulphur dioxide in solution (p and t) such as in Figs. 1 and 2, lines of constant combined SO_2 are constructed by drawing straight lines through the points, $t = 2z$ ($p = 0$), and the points on the equilibrium curve ODE corresponding to the respective z units of combined sulfur dioxide, and then extending them into the area BAODE. In the diagrams these constant combined lines are shown only to the left of the curves ODE as areas under these curves represent conditions of supersaturation. For each diagram, the abscissa is read in units of free sulfurous acid (x) when using the line OAB, and in units of total sulfur dioxide (t) for points in the area BAODE.

As an example it is desired to determine the solubility of sulphur dioxide in a solution at 25 deg. C. which contains calcium bisulphite equivalent to 1.0 gram of combined sulphur dioxide per 100 grams of water above which the partial pressure of sulphur dioxide is 150 mm. Hg. Referring to Fig. 2, the point c is determined by the intersection of the combined line (1.0 on the z scale) with the pressure ordinate equal to 150 mm. The total sulphur dioxide is read off of the abscissa as 3.6 grams per 100 grams of water. From the equation, $x = t-2z$, the free sulphur dioxide (x) equals 1.6 grams per 100 grams of water. Obviously, with any two of the variables (p, t, z) of the diagrams known, the third can be determined. Beuschlein and Conrad *(1)* have indicated the use of similar diagrams for the determination of resistances to absorption in sulphite acid towers packed with limestone.

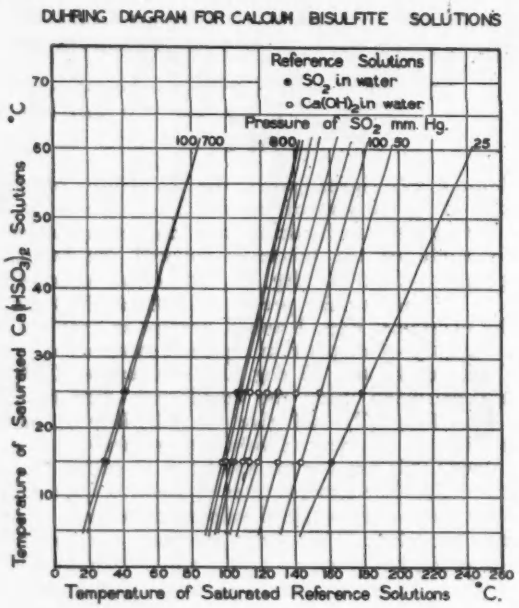

FIG. 3

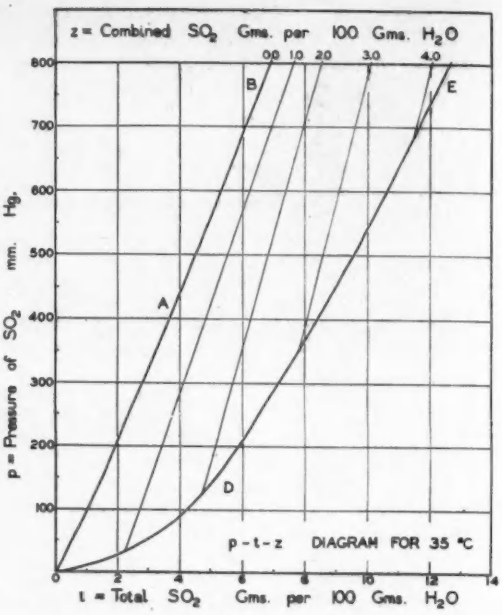

FIG. 4

In order to extend the applicability of these data, additional solubilities were obtained at 35 and 50 deg. C. both experimentally and by extrapolation making use of Duhring's Rule *(3)*. Harris *(5)* has shown that solubilities of non-hydrated salts may be obtained in two-component systems by use of this empirical relation. If the temperature at which a salt has a given solubility be plotted against the temperature at which a reference salt has the same solubility, or some multiple thereof, the points so determined are found to lie on a straight line. As the solubility of calcium bisulphite increases with decreasing temperature it is necessary to select as a reference substance one which also has an inverted solubility curve. These substances are relatively few but calcium hydroxide, when

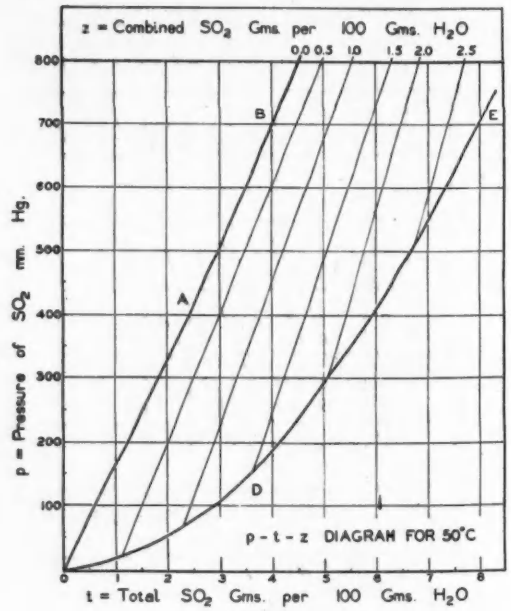
z = Combined SO_2 Gms. per 100 Gms. H_2O
0.0 0.5 1.0 1.5 2.0 2.5
B
E
A
D
p = Pressure of SO_2 mm. Hg.
p - t - z DIAGRAM FOR 50°C
t = Total SO_2 Gms. per 100 Gms. H_2O

FIG. 5

TABLE I.—COMPARISON OF CALCULATED (EXTRAPOLATED) AND EXPERIMENTAL SOLUBILITIES OF SO_2 IN $Ca(HSO_3)_2$ SOLUTIONS

Series	Temp. ° C.	Pressure P_{SO_2} P_{H_2O} mm. Hg	Total SO_2 (t) g./100 g. H_2O Obs.	Total SO_2 (t) g./100 g. H_2O Calc.	Free SO_2 (x+z) g./100 g. H_2O Obs.	Free SO_2 (x+z) g./100 g. H_2O Calc.	Combined SO_2 (z) g./100 g. H_2O Obs.	Combined SO_2 (z) g./100 g. H_2O Calc.
1	35	761	12.02a	11.86	7.99a	7.77	4.03a	4.09
2	50	250	4.00b	3.68	2.46b	2.14	1.54b	...
3	50	535	5.39b	4.82	3.84b	3.27	1.55b	...
4	50	760	4.45b	4.37	3.89b	3.81	0.56b	...
5	50	760	6.09b	5.70	4.62b	4.23	1.47b	...
6	50	760	8.75b	7.68	5.96	4.89	2.79b	...
7	50	764	7.99	7.74	5.33	4.99	2.67	2.75
8	60	760	3.57b	3.32	3.02b	2.77	0.55b	...
9	60	760	5.10b	4.50	3.67b	3.07	1.43b	...
10	60	760	7.84	6.00c	5.05	3.35c	2.79b	2.65c

a Conrad, F. H., and Beuschlein, W. L.(2)
b Concentrations originally reported in grams per 100 cc. of solution,(4) recalculated for comparison using unpublished density data obtained by Newstrom Ives at University of Washington.
c Predicted saturated value.

its solubility is multiplied by 100, served as a satisfactory reference material for the calcium bisulfite. Solutions of sulphur dioxide in water were selected as the reference material for obtaining the free sulphur dioxide in saturated calcium bisulphite solutions. Duhring lines are shown in Fig. 3 for constant partial pressures of sulphur dioxide. In using the Duhring diagram to predict the solubility of combined sulphur dioxide or of equivalent calcium sulphite, it is necessary to select a Duhring line corresponding to the partial pressure of sulfur dioxide at the desired temperature, as the Duhring lines are widely separated and of changing slopes as shown in Fig. 3. This is not the case for the free sulphur dioxide as these lines are quite close together and a deviation in partial pressure for the line selected makes little difference in solubility. Partial pressures of water were assumed in this work to be the same as given in the Critical Tables *(6)* for aqueous solutions of sulphur dioxide.

The solubility of sulphur dioxide in a calcium bisulfite solution at 35 deg. C. and 761 mm. total pressure has been recorded *(2)*. A similar determination has since been made at 50 deg. C. Enkell *(4)* measured the amount of sulfur dioxide in solutions containing 1.5 per cent combined sulphur dioxide at 50 degrees for two pressures and in solutions with 0.54, 1.40 and 2.65 per cent combined respectively at one atmosphere total pressure at ten degree intervals of temperature between 40 and 80 deg. C. These values and those calculated by the above graphical methods are given in Table I. The calculated data for series 1 and 7 of Table I were obtained directly by the use of Duhring's Rule. The solubilities of total, free and combined sulphur dioxide in aqueous calcium bisulphite solutions are tabulated for the temperatures of 5, 15, 25, 35, 50, and 60 deg. C. at pressures of sulphur dioxide less than one atmosphere.

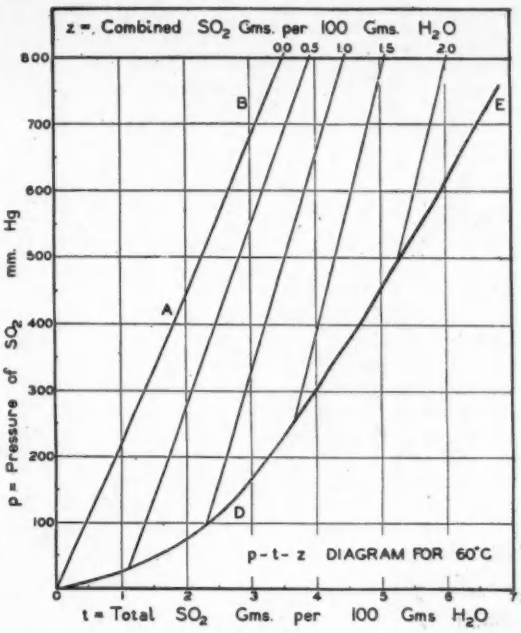

FIG. 6

The p-t-z diagrams for the extrapolated data are given in Figs. 4, 5, 6, and 7. The deviation between calculated and observed data of the authors (series 1 and 7, Table I) amounts to a maximum of 3.4 mg. per gram of water. The deviation between the calculated values of the authors and observed data of Enkell *(4)* is less than 6.0 mg. per gram of water with the exception of three comparisons at atmospheric pressure. The authors have definite reason to believe that Enkell's data are in error in at least one of these (series 10). Caution must be observed however in extrapolation by Duhring's Rule beyond a temperature at which the solid phase undergoes a transition. While attempting to obtain experimental results at the temperature of melting ice, a second solid phase, probably $SO_2.6H_2O$ was obtained. Fig. 7 is accordingly restricted to pressures below 556 mm. Roozeboom *(7)* has shown the pressure of the hydrated SO_2 at 5 deg. C. in water to be 0.74 atmospheres or 562 mm. For the temperatures of 15 and 25 deg. C. the solid phase has been found to be $2CaSO_3.H_2O$ *(2)*.

Table III presents a comparison of the experimental

TABLE II.—DATA FOR p-t-z DIAGRAMS

Grams per 100 grams of water

P_{SO_2} P_{H_2O} mm. Hg	5° C.a Total SO_2 (t)	5° C.a Free SO_2 (x+z)	5° C.a Comb. SO_2 (z)	15° C.b Total SO_2 (t)	15° C.b Free SO_2 (x+z)	15° C.b Comb. SO_2 (z)	25° C.b Total SO_2 (t)	25° C.b Free SO_2 (x+z)	25° C.b Comb. SO_2 (z)	35° C.a Total SO_2 (t)	35° C.a Free SO_2 (x+z)	35° C.a Comb. SO_2 (z)	50° C.a Total SO_2 (t)	50° C.a Free SO_2 (x+z)	50° C.a Comb. SO_2 (z)	60° C.a Total SO_2 (t)	60° C.a Free SO_2 (x+z)	60° C.a Comb. SO_2 (z)
760	...	...	...	...	...	...	...	...	...	11.9	7.8	4.1	...	...	...	6.2	3.9	2.3
750	...	...	...	19.1	13.2	5.9	15.2	10.2	5.0	...	...	...	7.7	4.9	2.8	6.0	3.8	2.2
700	...	...	...	18.4	12.6	5.8	14.6	9.7	4.9	11.2	7.3	3.9	7.4	4.7	2.7	5.7	3.6	2.1
650	...	...	...	17.8	12.1	5.7	14.0	9.2	4.8	10.7	6.9	3.8	7.0	4.4	2.6	5.5	3.4	2.1
600	...	...	...	17.1	11.5	5.6	13.3	8.7	4.6	10.2	6.6	3.6	6.7	4.2	2.5	5.0	3.1	1.9
550	20.9	14.5	6.4	16.3	10.9	5.4	12.7	8.3	4.4	9.6	6.1	3.5	6.3	3.9	2.4	4.6	2.8	1.8
500	20.1	13.8	6.3	15.5	10.2	5.3	12.0	7.8	4.2	9.1	5.8	3.3	5.9	3.6	2.3	4.2	2.6	1.6
450	19.2	13.1	6.1	14.7	9.6	5.1	11.3	7.3	4.0	8.3	5.2	3.1	5.5	3.3	2.2	3.9	2.4	1.5
400	17.9	12.1	5.8	13.8	8.9	4.9	10.6	6.8	3.8	7.6	4.8	2.8	5.1	3.1	2.0	3.5	2.1	1.4
350	17.0	11.3	5.7	12.8	8.1	4.7	9.9	6.3	3.6	7.1	4.4	2.7	4.7	2.8	1.9	3.2	1.9	1.3
300	16.0	10.4	5.6	11.8	7.4	4.4	9.1	5.7	3.4	6.6	4.0	2.6	4.2	2.5	1.7	2.9	1.7	1.2
250	14.6	9.3	5.3	10.9	6.7	4.2	8.3	5.2	3.1	6.0	3.6	2.4	3.6	2.1	1.5	2.4	1.3	1.1
200	13.2	8.3	4.9	9.8	5.9	3.9	7.3	4.4	2.9	5.3	3.1	2.2	3.0	1.7	1.3	1.9	1.0	0.9
175	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.6	0.3	0.3
150	11.4	7.0	4.4	8.6	5.1	3.5	6.2	3.6	2.6	4.4	2.5	1.9	2.1	1.1	1.0	...	...	...
118	...	...	...	...	...	...	...	...	...	...	...	...	1.2	0.6	0.6	...	...	...
100	9.0	5.4	3.6	6.8	3.9	2.9	4.7	2.6	2.1	3.1	1.7	1.4	...	...	...	...	...	...
67	...	...	...	...	...	...	...	...	...	1.8	1.0	0.8	...	...	...	...	...	...
50	6.2	3.5	2.7	4.1	2.2	1.9	2.7	1.4	1.3	...	...	...	...	...	...	...	...	...
31.5	5.1	2.8	2.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

a Calculated by Duhring's Rule. b Experimental, Conrad, F. H., and Beuschlein, W. L.(2)

TABLE III.—COMPARISON OF CALCULATED (INTERPOLATED) AND EXPERIMENTAL SOLUBILITIES OF SO_2 IN $Ca(HSO_3)_2$ SOLUTIONS

Series	Pressure of SO_2 mm. Hg	Temp., deg. C.	Total SO_2 (t) g./100 g.H_2O Obs.[2]	Total SO_2 (t) g./100 g.H_2O Calc.	Free SO_2 (x+z)[1] g./100 g. H_2O Obs.[2]	Free SO_2 (x+z)[1] g./100 g. H_2O Calc.	Combined SO_2 (z) g./100 g. H_2O Obs.[2]	Combined SO_2 (z) g./100 g. H_2O Calc.
11	46.6	20	2.80	2.94	1.60	1.74	1.20	...
12	97.1	20	3.56	3.52	2.36	2.32	1.20	...
13	177.9	20	4.45	4.58	3.25	3.38	1.20	...
14	250.3	20	5.33	5.46	4.13	4.26	1.20	...
15	374.1	20	6.92	7.06	5.72	5.86	1.20	...
16	595.3	20	9.38	9.70	8.18	8.50	1.20	...

[1] Free SO_2 reported by Smith and Parkhurst(9) corresponds to the value of x alone as defined in the present paper.
[2] Smith and Parkhurst results originally reported in grams per 100 cc. of water. Recalculated for comparison.

data of Smith and Parkhurst *(9)* at 20 deg. C. with data obtained by graphical interpolation of the experimental data of the authors. The maximum deviation in this comparison is 3.2 mg. per gram of water in one instance, all others being less than 1.4 mg. per gram of water.

In this paper, the Duhring relation has been applied to a three phase-three component system for the determination of the solubility of two components. Whereas the experimental date at 15 and 25 deg. C. have been extrapolated for the temperatures of 35 and 50 deg. C., single solubility determinations at these temperatures add greatly to the reliability of the predictions throughout the pressure range. The agreement between the two calculated and experimentally determined solubilities for the two temperatures (35 and 50 C.), and also the comparison of similar data for the region where but liquid and gas phase are present, indicate that p-t-z diagrams similar to those in Figs. 1 and 2 will describe the system CaO-SO_2-H_2O for the range of temperatures 5 to 60 deg. C. and of total pressures to one atmosphere.

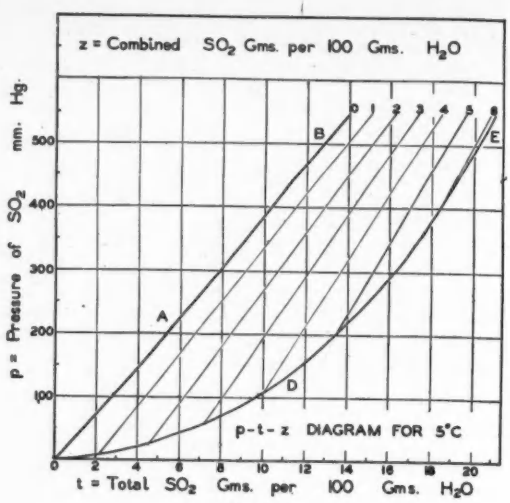

FIG. 7

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Air Infiltration Through Insulating Board

By L. K. Arnold[1]

The amount of heat lost by the infiltration of air through the wall of a building may be considerable although the actual thermal conductivity of the material used in its construction may be low. This is not true in well constructed buildings having an outer wall of tight masonry or approved frame construction and an inner plastered wall. However, there are types of construction in which building paper and plaster are not used or are poorly applied in which the infiltration losses may be high. Where insulating board is used in such construction the infiltration loss through the wall occurs both at the joints and through the board itself. The amount of loss through the joints depends upon the construction of the joints while the loss through the board depends upon the characteristics of the board itself. While apparatus which could be used in testing the permeability of the board has been described *(1)* no record of actual tests showing either the permeability of commercial insulating boards or the effect upon permeability of variations in the manufacture of a given insulating board has been found in the literature. Larson, Nelson, and Brantz *(2)* determined the infiltration through a wall section covered with "fiber sheathing board" but their data covers the infiltration through both the board and the joints. Studies have therefore been made to determine the infiltration through representative commercial insulating board and through board made experimentally from cornstalk fiber.

[1] Associate Chemical Engineer, Iowa Engineering Experiment Station, Iowa State College, Ames, Iowa. The work reported in this paper is a part of the regular Station project on the production of insulating board from cornstalks.

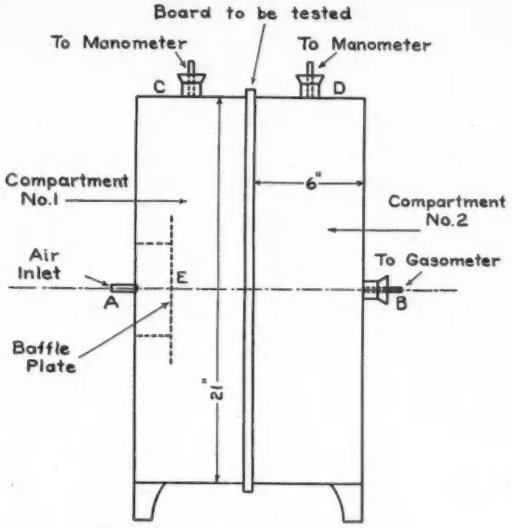
To determine the wind infiltration the apparatus in Fig. 1 was designed and constructed. This consisted of two sheet iron boxes open on one side and equipped around the open side with a flange. The flanges of the two boxes are provided with holes so spaced that when the boxes are placed with their open sides together they may be bolted together. Each flange was fitted with a felt gasket. One box was provided with a ⅛-inch pipe nipple, A, in front of which was a baffle plate, E. The other box, in the corresponding position, had an opening, B, fitted with a one-hole rubber and glass tube. Both boxes were provided at the top with openings (C and D) fitted with rubber stoppers in which tubes were inserted connecting to manometers.

The outlet tube at B was connected by rubber tubing to a gas holder. This gas holder consisted of three concentric sheet metal cylinders with a small diameter of about 19 inches and height of 16 inches, the inner and outer of which were connected together at the bottom so that the annular space between them formed a water tight compartment. The inner cylinder had a gas tight top; the outer was open at the top. The third cylinder, which had a top but no bottom, was of such size that it slid freely up and down in the annular space between the other two cylinders. The inner cylinder was attached by means of a cord over a small pulley to a counter weight so that it would slide up and down freely. The annular space between the cylinders was filled with water to act as a seal. Air passing into the space between the top of the inner cylinder and the top

TABLE I.—AIR INFILTRATION THROUGH COMMERCIAL INSULATING BOARDS

Board	Pressure difference in inches of water	Rate of infiltration, cubic feet per square foot per hour
A	0.19	10.00
	0.38	10.80
	0.56	12.17
	0.69	15.20
	0.81	17.10
A	0.08	6.05
	0.19	9.36
	0.22	11.86
	0.43	13.60
	0.45	15.41
B	0.50	3.56
	1.12	6.50
	1.70	8.40
	1.75	10.20
	2.17	11.30
B	0.65	3.37
	1.14	5.71
	1.68	7.67
	2.25	9.36
	2.63	10.79
C	0.35	4.87
	0.60	7.92
	0.90	10.20
	1.20	11.82
	1.40	13.68
D	0.25	5.35
	0.50	9.20
	0.75	12.00
	0.94	13.20
	1.19	17.10
E	6.00*	0.00

*Total pressure applied.
Note: Board A from waste wood; B from sugar cane; C from wood and paper tailings; D from wood and paper tailings; E from repulped newspapers. Board E is not a true insulating board.



Air Infiltration Apparatus
FIG. 1

of the middle cylinder would cause the middle cylinder to rise an amount proportional to the volume of air. The middle cylinder was calibrated so that the volume of air contained in it could be read from the height.

The testing was carried out as follows: A piece of insulating board 25 inches square was drilled with holes to match those on the flanges and was clamped between the boxes. The air inlet, A, was then connected to the compressed air line. Air was bled into compartment No. 1 until the desired pressure difference between No. 1 and No. 2, as shown by the difference in the readings on the manometers, was attained. The air was allowed to continue passing through the board at this constant pressure drop until substantially the maximum displacement in the gas holder had been reached. The total time and volume were recorded and the procedure repeated to give a total of six readings which were averaged. The velocity in terms of cubic feet per square foot per minute was then calculated from the average results. This procedure was then repeated for other pressure differences across the board.

Tests were made upon four different commercial boards. These boards were purchased on the open market from retail dealers and as far as is known were representative pieces. They were allowed to stand several days in the laboratory before testing to come to an equilibrium in moisture. Results are given on two of these boards for two different samples each which were purchased about one year apart. The results of these tests are shown in Table I and Fig. 2.

To study the factors affecting air infiltration boards were made from cornstalk pulp on a semi-commercial scale in the following manner: Shredded cornstalks were boiled in water for three hours at atmospheric pressure after which they were refined in a rodmill. The pulp from the rodmill was mixed with shredded old newspapers in water and three per cent rosin size added. The refining was then completed in an attrition type (Bauer) refiner and the hydrogen ion concentration adjusted with aluminum sulphate. The pulp was formed into a mat upon a continuous board forming machine, pressed between pressed rolls, and dried in a tunnel type (Coe) drier.

Boards containing varying contents of waste newspaper pulp were tested. While these showed in a general way that the addition of paper decreased the air infiltration, the data were not accurate because of variations other than in the amount of paper. To eliminate these variations three batches of board were made up as follows: Two batches of pulp were prepared under

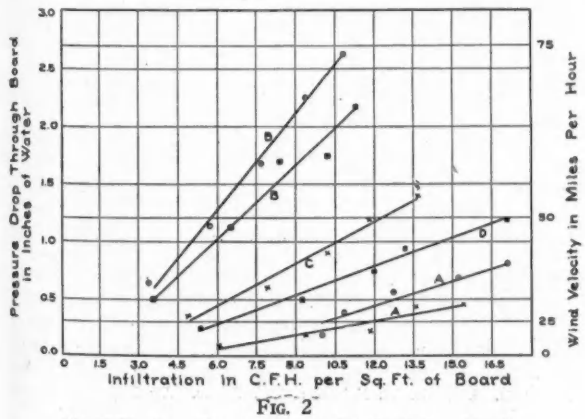


FIG. 2
Air Infiltration through Commercial Insulating Boards.

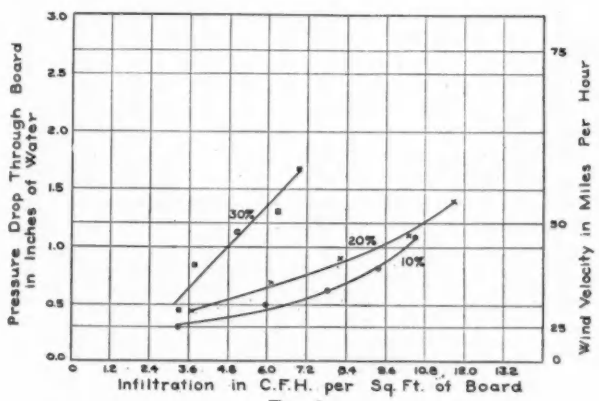

Pressure Drop Through Board in Inches of Water
Wind Velocity in Miles Per Hour
Infiltration in C.F.H. per Sq. Ft. of Board
30%
20%
10%
FIG. 3
Relation of Air Infiltration to Paper Content of Board.

TABLE II.—RELATION OF AIR INFILTRATION TO PAPER CONTENT

Per cent of paper	Pressure difference in inches of water	Rate of infiltration, cubic feet per square foot per hour
10	0.30	3.30
	0.50	5.97
	0.62	7.82
	0.81	9.40
	1.09	10.54
20	0.44	3.67
	0.69	6.15
	0.90	8.21
	1.10	10.30
	1.40	11.70
30	0.45	3.31
	0.84	3.79
	1.13	5.05
	1.31	6.31
	1.67	6.95

Note: All infiltration rates calculated ½-inch thickness for board on the assumption that the infiltration is proportional to thickness. The actual thicknesses tested were 10 per cent, 7/16; 20 per cent, 5/32; and 30 per cent, 3/8 inches.

as nearly identical refining conditions as possible from the same steaming except that one contained 10 per cent paper and the other 30 per cent paper. Two-thirds of each batch was made into board. The remaining portions of the two batches were mixed together to give pulp of 20 per cent paper content and made into a board under the same forming and drying conditions as used for the other two boards. After allowing the boards to stand in the laboratory several days so as to come to a moisture content in equilibrium with the air samples were cut from each of the three batches containing respectively, ten, twenty, and thirty per cent paper and tested with results shown in Table II and Fig. 3. The data show decreased infiltration with increasing paper content. This is as would be expected since fine and more highly hydrated paper pulp fills in between the relatively coarse board fibers and tends to produce a more compact board.

To observe the effect of surface treatment two test pieces were cut from adjacent portions of a standard board. One of these pieces was sprayed on the surface with paper pulp while the other was tested without treatment. The untreated board showed normal infiltration (Table III) while the paper coated board showed no infiltration under six inches water pressure, equivalent to a wind velocity of 112 miles an hour.

To study the effect of density upon infiltration a large batch of pulp was formed into mats of various thicknesses using only light pressure in the rolls. These mats of wet board were dried in a steam heated hydraulic press using stops to give a uniform thickness of one-

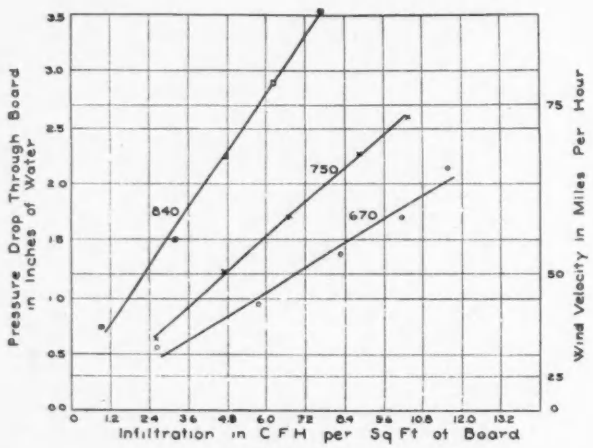

Pressure Drop Through Board in Inches of Water
Wind Velocity in Miles Per Hour
Infiltration in C F H per Sq Ft of Board
840
750
670

FIG. 4

Air Infiltration for Various Densities of Board. Densities are given in pounds per 1000 square feet of board on ½ inch basis.

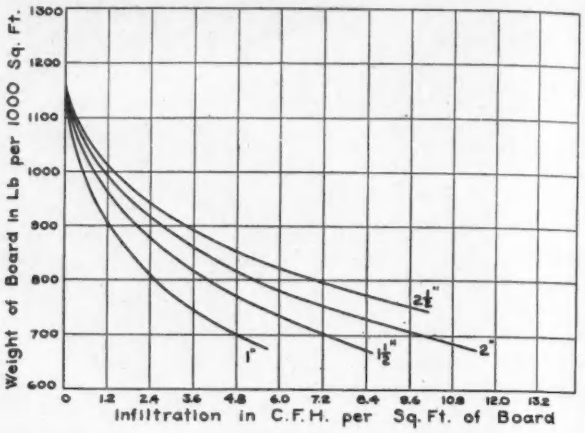


FIG. 5

Relation of Infiltration of Density of Board for Various Pressure Differences

half inch and pressing with enough pressure to give that thickness. From the dry board thus produced a set of four boards having weights of 670, 750, 840, and 1160 pounds per 1000 square feet (½-inch basis) was selected for tests. The results (Table IV and Figs. 4 and 5) indicate that an increase in density gives a decrease in infiltration. At higher pressures the amount of infiltration appeared to be inversely proportional to the density. At lower pressures the infiltration values approached a common amount, the straight line relationship between the two no longer holding. The most dense board of the series showed no air infiltration under six inches of water pressure. The density-infiltration relationships just shown hold only for boards made from the same pulp. This is shown by the fact that the poorest of the commercial boards tested from the standpoint of air infiltration is a denser board than the best of those tested.

TABLE III.—AIR INFILTRATION THROUGH ONE-HALF INCH BOARD

	Pressure difference in inches of water	Rate of infiltration in cubic feet per square foot per hour
Untreated board	0.25	4.74
	0.52	7.70
	0.77	10.04
	1.00	12.00
	1.25	13.73
With surface sprayed	6.00*	0.00

* Total pressure applied.

TABLE IV.—RELATION OF AIR INFILTRATION TO DENSITY OF BOARD

Weight, pounds per 1,000 square feet	Thickness, inches	Pressure difference in inches of water	Rate of infiltration in cubic feet per square foot per hour
670	7/16	0.56	2.65
		0.94	5.77
		1.37	8.27
		1.69	10.14
		2.13	11.57
750	1/2	0.64	2.62
		1.23	4.71
		1.70	6.77
		2.28	8.86
		2.60	10.39
840	1/2	0.75	0.95
		1.50	3.21
		2.25	4.77
		2.90	6.24
		3.55	7.70
1160		6.00*	0.00

* Total pressure applied.

Literature Cited

(1) Carson, F. T. A Sensitive Instrument for Measuring the Air Permeability of Paper and Other Sheet Materials. *Paper Trade J.* 99:44-52 (Oct. 18, 1934).

(2) Larson, G. L., D. W. Nelson, and C. Braatz. Air Infiltration Through Various Types of Wood Frame Construction. *Trans. Am. Soc. Heating and Ventilating Eng.* 36:397-428 (1930).

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Beating

The Beaterman. O. Merz. Papier-Ztg. 61, No. 97: 1822, 1824; No. 98: 1838-1839 (Dec. 2, 5, 1936).—The article discusses the extent to which the beaterman can influence the properties of the resulting beater charge by gradual or rapid lowering of the roll, change in consistency, speed of circulation, period of beating, etc. The suitability of slow and free pulps with either long or short fibers for different purposes is discussed, as well as the troubles encountered when the pulp is beaten either too slow or too free. Coöperation between beaterman and machine tender is essential.—C. J. W.

Hysteresis in Water Sorption By Paper Making Materials. C. O. Seborg. Ind. Eng. Chem. 29:169-172 (Feb., 1937).—After the original desorption, hysteresis in a highly beaten spruce sulphite pulp was found to persist unchanged in magnitude upon repeated sorption cycles over a range of relative humidity from 0 to 95%. The ratio of adsorption equilibrium moisture contents to the corresponding desorption values of a wide variety of paper making pulps and stuffs over a range of relative humidity from 12 to 88%, inclusive, is apparently a constant which is slightly higher than the corresponding values for lignins, kapok and wood. The hysteresis constant is believed to be associated with some physical force or molecular characteristic of the cellulose molecule associated with the mechanism of sorption. The theory that sorption hysteresis can be attributed to the difference in number of hydroxyl groups available for attachment of water molecules during adsorption and desorption appears inadequate. An adequate explanation of the hysteresis phenomenon should include the consideration of some additional factor of a physical nature.—A.P.-C.

Beating Pulp with High-Intensity Sound. Stephen A. Buckingham. Paper Industry 18: 749-752 (Dec., 1936).—It has been found that treatment with high-intensity sound can produce a beating effect on wood pulp, which, however, was from 2 to 150 times less efficient than that of the beater, so that considerable improvement in apparatus or technic will be necessary before high-intensity sound can be used economically for commercial beating. A description of the apparatus is given and data are presented to show the magnitude of the effect. Other uses of high-intensity sound in the paper industry are suggested.—A.P.-C.

Beater Roll. Soc. Anon. des Anciens Establissements Catel et Farcy. Fr. pat. 804,181 (July 11, 1935).—The edges of the knives are saw-tooth shaped, instead of being straight, the teeth of successive knives being staggered or arranged quincuncially relatively to the direction of rotation of the roll.—A.P.-C.

Bleaching

The Bleaching of Sulphite Pulp. Sigurd Samuelsen. World's Paper Trade Rev. 106: 1284-1288, 1380, 1382, 1420, 1422, 1462-1466, 1506, 1508, 1542, 1544, 1586, 1588, 1621-1626, 1670 (Oct. 23 to Nov. 20, 1936).—An account of investigations carried out during the last 2 yrs. at the Paper Industry Research Institute, Oslo, Norway. In single-stage bleaching it is probable that dissolution of the incrustants is responsible for the main chlorine consumption and that any further breakdown of the incrustants, destruction of the coloring matter, and eventual attack of the fibers must be considered as more casual secondary effects. In alkaline solution an essential part of the bleaching agent is consumed in the oxidizing breakdown of incrustants during or after their removal from the pulp, contrary to what occurs in acid solution. The liberation of incrustants from cellulose is essentially brought about in the same manner over the whole pH range, but it takes place much more rapidly in acid than in alkaline solution. Single-stage bleaching is economically warrantable only when the pulp is sufficiently delignified in cooking, and is most suitably carried out in alkaline or very slightly acid medium. In two-stage bleaching the most appropriate conditions as regards acidity consist in liberating incrustants in the least degraded state in acid solution (treatment with elementary chlorine or chlorine water) and destroying the coloring matter in alkaline media (sodium hypochlorite or bleaching powder in solution of definite initial alkalinity). The advantages of high-consistency second-stage bleaching, if otherwise technically practicable, consist mainly in shortening the time of bleaching and better utilization of the bleach. Removal of alkali-soluble organic matter is important as it is very difficult to bleach. Danger of overbleaching is more pronounced with a pulp not treated with alkali. It was impossible to demonstrate any significant changes in the strength properties of the bleached pulps in relation to those of the unbleached pulps when bleaching was carried out under optimal or nearly optimal conditions.—A.P.-C.

Bleaching of Rag Half Stock by Calcium Hypochlorite. Richard C. Crain. Paper Trade J. 103, No. 24: 37-46 (Dec. 10, 1936).—The effects of the concentration of the calcium hypochlorite solution, ratio of available chlorine to cellulose, time of treatment, variations in temperature over a range of 15° to 45° C. and pH of the bleach liquor were studied by means of determinations of viscosity, alpha-, beta-, and gamma-cellulose, copper number, and absorption of methylene blue.—A.P.-C.

Controlling the Available Chlorine in Bleaching Agents M. Déribéré. Papeterie 58: 1122-1131 (Dec. 25, 1936).—A brief description of the various methods of determining available chlorine.—A.P.-C.

A Bleach Liquor Slide Rule. O. K. Graef. Paper Industry 18: 833-835 (Jan., 1937).—An explanation of the construction and use of a slide rule designed to obtain directly the quantity of bleach liquor required per ton of pulp from the bleach demand of the pulp and the available chlorine (g. per l.) content of the liquor.—A.P.-C.

Apparatus for Bleaching Pulp. Mathew F. McCombs and Francis W. Decker, assignors to Niagara Alkali Co. U. S. pat. 2,065,387 (Dec. 22, 1936).—The apparatus comprises a shell with a frustro-conical top from which an outlet pipe emerges, and an outwardly dished bottom

through which an inlet pipe extends into the upper portion of the shell. An annular partition is provided between the inlet pipe and the shell, and has a frustro-conical top overlying and enclosing the inlet pipe, but spaced from it and the shell. Chlorine is injected into and mixed with the pulp before it reaches the inlet pipe. On being discharged through the inlet pipe, the pulp travels down between the pipe and annular partition and then upward between the partition and shell. On passing through the outlet pipe it is mixed with milk of lime.—A.P.-C.

Fillers

Correlation Between Filler Content of Paper and Its Technological Properties. W. Brecht and H. Pfretzschner. Papier-Fabr. 24, No. 46: 417-419; No. 47: 429-433; No. 48: 439-447; No. 49: 449-452 (Nov. 15-Dec. 6, 1936).—The article is based on work done in connection with a dissertation at Darmstadt. It embodies an extensive study on filler retention and the factors involved, such as the different types of filler, the furnish, and chemicals, alum, size, etc.). The authors consider the actual loading process the result of four individual processes: filtration, adsorption, diffusion, and occlusion. Several apparent contradictions in literature can be explained on the basis of this theory. The specific weight of the fillers does not influence retention. Particle size plays a role in the case of identical fillers, in that the finer the size, the better the retention. However, no conclusions can be drawn from the particle size of different fillers as to their respective yield in the sheet. The study of the shape of the particles offered the explanation for the sometimes extremely large variations in results. It was also found that all factors which increase the density of the sheet structure are responsible for increased filler retention. The retention capacity of different fibers, in increasing order, is the following: cotton, sulphate pulp, aspen pulp, sulfite pulp, straw pulp, rag pulp, white groundwood. In the case of a mixed furnish the filler retention follows a somewhat complicated law of mixtures which is explained by formulas and graphs. Previous studies had indicated an increase in filler yield through the addition of chemicals. Peptizing agents increased retention at first with increasing *p*H; the yield then dropped rapidly. In using aluminum sulfate alone increased yields are obtained with decreasing *p*H. With additions of rosin size, increase in yield is obtained in the case of large additions of size only; otherwise the yield is lower than with aluminum sulfate alone.—C.J.W.

Possibility of Substituting Imported Kaolins by German Products. B. v. Possanner, A. Laubenheimer, R. Wagner and R. Jenke. Papier-Fabr. 34, No. 50: 459-477 (Dec. 13, 1936).—The article describes an extensive study in considerable detail on the suitability of German kaolins for paper making. The work was carried out in two sections. The Deutsche Forschungsinstitut für Steine und Erden evaluated the following properties of the clays: *a*) mineral composition and quantitative determination of the residues from the 4900 and 10,000 mesh sieve, *b*) distribution of grain size and specific weight, *c*) whiteness, and *d*) plasticity. The paper institute at Köthen tested the influence of the different fillers upon the technological properties of the paper; a number of preliminary experiments was necessary for finding the most suitable methods and instruments. The following tests were made: retention, smoothness, percentage of scratching particles, transparency, and whiteness. According to the results obtained the kaolins under investigation could be divided into four groups: 1) high class products with pure white color and excellent technological properties, 2) kaolins with very good technical properties, but poorer color, 3) kaolins with poorer technical properties and poorer color, and 4) kaolins with unsatisfactory technical properties or bad color. Whiteness, absence of scratching particles, and smoothness were found of greatest importance from the paper making viewpoint. Brightening of dull colors was not found feasible. However, kaolins of group 2 would find a larger application if the public could be accustomed to yellowish (ivory) shades in certain papers where it is not at all disturbing.—C.J.W.

Sizing Pigments for Opacifying and Brightening Paper. V. A. Belcher. Paper Mill 59, No. 26:68-71 (June 27, 1936).—A brief discussion of the merits of zinc sulphide and zinc oxide as paper pigments and of the grades of paper where their use is most suitable.—A.P.-C.

Method for Making Paper. John Campbell, assignor to International Paper Co. U. S. pat. 2,062,442 (Dec. 1, 1936).—In the manufacture of paper containing calcium carbonate as filler, the white water that is returned to the beater is passed over lump alum so that the pH is maintained sufficiently neutral to prevent formation of free carbon dioxide, such carbon dioxide as is formed combining with the calcium carbonate present in the white water to form calcium bicarbonate.—A.P.-C.

Process for the Manufacture of Filled Paper. A. E. H. Fair. U. S. pat. 2,062,563 (Dec. 1, 1936).—A filler suspension is sprayed in a finely divided state against an inclined baffle and is flowed therefrom by gravity on to the top of the paper sheet at a suitable point of the fourdrinier wire.—A.P.-C.

Sizing

The Microscopical Mechanism of Rosin Sizing. A preliminary report of observations of rosin size in paper. H. N. Lee. Paper Trade J. 103, No. 27: 32-36 (Dec. 31, 1936).—Microscopical studies of a number of variously-prepared, rosin-sized papers were made; the appearance and distribution of precipitated rosin size in these papers are described by semi-diagrammatic drawings and descriptions, and the characteristics of rosin sizing as determined in these papers are listed.—A.P.-C.

The Sizing of Paper and Printing. P. H. Prior. Paper-Maker 92: 358-362 (Nov. 2, 1936).—A discussion of the function and necessity (or otherwise) of paper sizing from the standpoint of different printing processes.—A.P.-C.

Rosin Substitutes for the Sizing of Printing Papers. Papyro. Papeterie 58: 1074, 1077 (Dec. 10, 1936).—From a discussion of possible substitutes for rosin size it is concluded that there is at present no substitute possessing all the qualities of rosin for this purpose.—A.P.-C.

Starch Problems in Paper Making. Philip S. Bolton. Paper Mill 59, No. 26: 80-84 (June 27, 1936).—A description of the purification of corn starch with a discussion of its use in paper making.—A.P.-C.

Improvement to the Sizing of Paper, More Particularly Photographic Paper. Kodak Pathé. Belg. pat. 414,321 (April 30, 1936).—In order that the sizing solution may penetrate into the body of the paper, air is expelled by passing the paper through a steam box and then immediately through a sizing bath.—A.P.-C.

Manufacture of Paper. D. K. Pattiloch and I. B. Pattiloch. Brit. pat. 455,477 (March 27, 1936).—At least 1% of sodium metasilicate or aluminate is added to the pulp containing about 2% of boiled starch and excess of alum. The addition is made subsequent to beating, sufficient alum being present initially to give a final pH preferably of 5.5 to 7.0—A.P.-C.

Index, Technical Section, Paper Trade Journal, Vol. 104

January to June, 1937

Prepared by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI

The page numbers in the following index refer to the continuous paging of the *Technical Section* and have no relation to the paging of the individual numbers of the PAPER TRADE JOURNAL.

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Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports, of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING JULY 17, 1937
SUMMARY

Cigarette paper .....144 cs.
Wall paper .....26 cs.
Paper hangings .....11 lbs.
Newsprint .....14,614 rolls
Printing paper .....119 rolls, 1,364 bls., 129 cs.
Wrapping Paper .....999 rolls, 445 lbs., 21 cs.
Drawing paper .....67 cs.
Filter paper .....133 pkgs., 15 cs.
Bristol boards .....2 cs.
Surface coated paper .....11 cs.
Metal coated paper .....6 cs.
Basic paper .....16 cs.
Coated paper .....4 cs.
Colored paper .....6 cs.
Transfer pictures .....13 cs.
Transfer paper .....20 cs.
Transparent paper .....4 cs.
Decalcomanias .....24 cs.
Tissue paper .....15 cs.
Tracing paper .....2 cs.
Letter paper .....15 cs.
Gummed paper .....10 cs.
Design paper .....1 cs.
Boards .....20 bls.
Paper tubes .....180 pkgs.
Miscellaneous paper .....301 bls., 257 rolls, 127 cs.

CIGARETTE PAPER

R. J. Reynolds Tobacco Co., *Manhattan,* Havre, 77 cs.
R. J. Reynolds Tobacco Co., *Pr. Harding,* Havre, 67 cs.

WALL PAPER

Meadows Wye & Co., *Manhattan,* Havre, 1 cs.
——, *Columbus,* Bremen, 1 cs.
——, *Pr. Harding,* Havre, 24 cs.

PAPER HANGINGS

——, *Aquitania,* Southampton, 11 bls.

NEWSPRINT

H. G. Craig Co., *Kermicfi* Donnacona, 298 rolls.
International Paper Co., *International No. 1,* Gatineau, 306 rolls.
Lunham & Reeve, Inc., *Scanyork,* Kotka, 265 rolls.
Jay Madden Corp., *Scanyork,* Kotka, 626 rolls.
Newspaper & Magazine Paper Corp., *Rydboholm,* Norrkoping, 1,545 rolls.
Brooklyn Daily Times, *Rydboholm,* Hallstavik, 556 rolls.
Gilman Paper Co., *Rydboholm,* Hallstavik, 666 rolls.
N. Y. Evening Journal, *Rydboholm,* Kotka, 750 rolls.
International Paper Co., *Doverhill,* Dalhousie, 4,779 rolls.
International Paper Sales Co., *Doverhill,* Dalhousie, 2,032 rolls.
Jay Madden Corp., *Columbus,* Bremen, 339 rolls.
International Paper Co., *G. T. D.,* Gatineau, 303 rolls.
N. Y. Post, *Germa,* Port Alfred, Que., 1,638 rolls.
Perkins Goodwin & Co., *New York,* Hamburg, 411 rolls.

PRINTING PAPER

Steiner Paper Corp., *Columbus,* Bremen, 25 cs.
Dingelstedt & Co., *Columbus,* Bremen, 65 cs.
E. Dietzgen & Co., *New York.* Hamburg, 25 cs.
Senefelder Co. Inc., *New York,* Hamburg, 14 cs.
Parsons & Whittemore, Inc., *Pr. Harding,* Hamburg, 1,364 bls.
Jay Madden Corp., *Pr. Harding,* Hamburg, 119 rolls.

WRAPPING PAPER

Guaranty Trust Co., *Rydboholm,* Gothenburg, 445 bls., 485 rolls.
R. Reiner, Inc., *New York,* Hamburg, 21 cs.
Jay Madden Corp., *Pr. Harding,* Hamburg, 514 rolls.

DRAWING PAPER

H. Reeve Angel & Co. Inc., *American Trader,* London, 6 cs.
Devoe & Raynolds Co., *American Trader,* London, 2 cs.
Keuffel & Esser Co., *American Trader,* London, 2 cs.
Keuffel & Esser Co., *Manhattan,* Hamburg, 54 cs.
Favor Ruhl & Co., *Manhattan,* Havre, 3 cs.

FILTER PAPER

R. H. Macy & Co., *Manhattan,* Havre, 1 cs.
Heemsoth Kerner Corp., *Manhattan,* Havre, 1 cs.
H. Reeve Angel & Co. Inc., *American Trader,* London, 13 cs.
J. Manheimer, *Aquitania,* Southampton, 133 pkgs.

BRISTOL BOARDS

Keuffel & Esser Co., *American Trader,* London, 2 cs.

SURFACE COATED PAPER

C. Happel, *Manhattan,* Hamburg, 3 cs.
Dingelstedt & Co., *Gerolstein,* Antwerp, 8 cs.

METAL COATED PAPER

K. Pauli Co., *New York,* Hamburg, 6 cs.

BASIC PAPER

Dingelstedt & Co., *Columbus,* Bremen, 16 cs.

COATED PAPER

W. J. Byrnes, *Manhattan,* Southampton, 4 cs.

COLORED PAPER

D. C. Andrews & Co., *Bremen,* Bremen, 2 cs.
International F'd'g. Co., *New York,* Hamburg, 4 cs.

TRANSFER PICTURES

Rohner Gehrig & Co., *Columbus,* Bremen, 8 cs.
Rohner Gehrig & Co., *Bremen,* Bremen, 5 cs.

TRANSFER PICTURES

Atlantic F'd'g. Co., New York, Hamburg, 20 cs.

TRANSPARENT PAPER

——, *Maasdam,* Rotterdam, 4 cs.

DECALCOMANIAS

Sellers Transportation Co., *Columbus,* Bremen, 21 cs.
Sellers Transportation Co., *Bremen,* Bremen, 3 cs.

TISSUE PAPER

——, *Kotoku Maru,* Kobe, 13 cs.
——, *New York,* Hamburg, 2 cs.

TRACING PAPER

Titan Shipping Co., *Bremen,* Bremen, 2 cs.

LETTER PAPER

B. Altman & Co., *New York,* Hamburg, 15 cs.

GUMMED PAPER

Heemsoth Kerner Corp., *Columbus,* Bremen, 8 cs.
E. B. Baehr & Sons, *Pr. Harding,* Havre, 2 cs.

DESIGN PAPER

Wilkes-Barre Lace Manfg. Co., *Scythia,* Liverpool, 1 cs.

BOARDS

Salwen Paper Co., *Rydboholm,* Gothenburg, 20 bls.

PAPER TUBES

——, *New York,* Hamburg, 180 pkgs.

MISCELLANEOUS PAPER

Wolf & Kohn, *Manhattan,* Havre, 1 cs.
Jay Madden Corp., *Scanyork,* Helsingfors, 37 bbls.
Japan Paper Co., *Peter Maersk,* Kobe, 57 cs.
Coty Processing Co., *Normandie,* Havre, 5 cs.
——, *Kotoku Maru,* Kobe, 32 cs.
Keuffel & Esser Co., *New York,* Hamburg, 32 cs.
——, *New York,* Hamburg, 204 bls., 257 rolls.

RAGS, BAGGINGS, ETC.

——, *Express,* Piraeus, 271 bls. rags.
Castle & Overton, Inc., *J. Christensen,* Alexandria, 288 bls. bagging.
R. J. Ross & Co. Inc., *J. Christensen,* Alexandria, 216 bls. rags.
Irving Trust Co., *J. Christensen,* Istanbul, 82 bls. bagging.
Irving Trust Co., *Orizaba,* Vera Cruz, 71 bls. rags.
E. J. Keller Co. Inc., *Black Hawk,* ——, 134 bls. bagging.
R. & V. Miller, *Black Condor,* Rotterdam, 17 bls. rags.
R. & V. Miller, *Black Condor,* Antwerp, 4 bls. rags.
Irving Trust Co., *Black Condor,* Antwerp, 38 bls. rags.
G. M. Graves Co. Inc., *Transylvania,* Glasgow, 125 bls. bagging.
——, *Transylvania,* Glasgow, 121 bls. bagging, 67 bls. paper stock.
Irving Trust Co., *Ayuruoca,* Rio de Janiero, 28 bls. rags.
R. Blank, *Vincent,* Dunkirk, 54 bls. rags.
R. Blank, *Vincent,* Havre, 149 bls. rags.
D. Benedetto, Inc., *Vincent,* Havre, 71 bls. rags.
J. F. Keene, Inc., *Vincent,* Havre, 30 bls. rags.
Van Oppen & Co., *Vincent,* Havre, 52 bls. rags.
J. Cohen & Son Co. Inc., *Vincent,* Havre, 32 bls. rags.
Castle & Overton, Inc., *Vincent,* Havre, 89 bls. rags.
——, *Vincent,* Havre, 119 bls. cotton waste.
Chase National Bank, *Mercier,* Antwerp, 75 bls. bagging.
Van Oppen & Co., *Mercier,* Antwerp, 69 bls. paper stock.
——, *American Shipper,* Manchester, 163 bls. cotton waste.
E. Butterworth & Co. Inc., *American Shipper,* Manchester, 55 bls. old twines.
M. Snedeker Corp., *American Shipper,* Belfast, 82 bls. paper stock.
G. A. Henshaw & Son, *American Shipper,* Belfast, 73 bls. paper stock.
——, McKeesport, *Leith,* 50 bls. rags.
Castle & Overton, Inc., *McKeesport,* Dundee, 139 bls. paper stock.
——, *McKeesport,* Dundee, 105 bls. paper stock.
G. A. Henshaw & Son, *Gerolstein,* Antwerp, 71 bls. flax waste.
——, *Gerolstein,* Antwerp, 58 bls. rags.
Wertheimer Bag Co., *Fort Townshend,* Halifax, 108 bls. bagging.
——, *New York,* Hamburg, 251 bls. rags.
Royal Manufacturing Co., *New York,* Hamburg, 50 bls. cotton waste.

GLUE STOCK, ETC.

Milligan & Higgins Corp., *Scanyork,* Gdynia, 179 bls. glue stock.
American Express Co., *Scythia,* Liverpool, 360 bags hide cuttings.
——, *New York,* Hamburg, 230 bags bone glue.

OLD ROPE

——, *Exchester,* Seville, 81 bls., 153 coils.
Irving Trust Co., *Black Condor,* Rotterdam, 38 coils.
E. J. Keller Co. Inc., *Black Condor,* ——, 59 coils.
Irving Trust Co., *Black Condor,* Antwerp, 38 coils.
Irving Trust Co., *Ayuruoca,* Rio de Janiero, 44 bls.
——, *McKeesport,* Leith, 80 bls., 53 coils.

CHINA CLAY

Whitaker Clark & Daniels, *American Shipper,* Liverpool, 390 bags.

WOOD PULP

Lagerloef Trading Co., *Scanyork,* Helsingfors, 616 bls. sulphite, 104 tons.
Lagerloef Trading Co., *Scanyork,* Helsingfors, 1,680 bls. mechanical, 308 tons.
Lagerloef Trading Co., *Scanyork,* Kotka, 641 bls. sulphite, 107 tons.
Lagerloef Trading Co., *Scanyork,* Kotka, 125 bls. sulphate, 25 tons.
Lagerloef Trading Co., *Scanyork,* Wiborg, 1,574 bls. sulphite, 301 tons.
Lagerloef Trading Co., *Scanyork,* Wiborg, 2,032 bls. sulphate, 406 tons.
Castle & Overton, Inc., Scanyork, Wiborg, 1,454 bls. wood pulp, 290 tons.
D. M. Hicks, Inc., *Rydboholm,* Gothenburg, 240 bls. chemical pulp.
Perkins Goodwin & Co., *Rydboholm,* Gothenburg, 290 bls. sulphite.
Pulp Specialties, Inc., *Rydboholm,* Gothenburg, 169 bls. sulphate.
Price & Pierce, Ltd., *Rydboholm,* Gothenburg, 325 bls. sulphite.
Perkins Goodwin & Co., *Vigrid,* Gdynia, 5,824 bls. wood pulp, 897 tons.
Perkins Goodwin & Co., *Pilsudski,* Gdynia, 600 bls. wood pulp, 92 tons.
——, *Barbarigo,* Trieste, 333 bls. wood pulp.
——, *Barbarigo,* Trieste, 814 bls. wood pulp.
Castle & Overton, Inc., *New York,* Hamburg, 1,000 bls. wood pulp, 200 tons.
Castle & Overton, Inc., *Pr. Harding,* Hamburg, 2,215 bls. wood pulp, 443 tons.

WOOD PULP BOARDS

Fibre Products Manfg. Co., *Manhattan,* Hamburg, 23 bls.
Jay Madden Corp., *Scanyork,* Kotka, 79 rolls, 27 tons.
Fibre Case & Novelty Co. Inc., *Rydboholm,* Gothenburg, 34 bls.
——, *Rydboholm,* Kotka, 350 rolls.

WOOD PULP SHEETS

——, *Columbus,* Bremen, 50 bls.

NEWARK IMPORTS

WEEK ENDING JULY 17, 1937

H. G. Craig Co., *Newscarrier,* Donnacona, 329 rolls newsprint.

ALBANY IMPORTS

WEEK ENDING JULY 17, 1937

International Paper Co., *Sydfold,* Newcastle, N. B., 1,600 cords pulpwood.

PORTLAND IMPORTS

WEEK ENDING JULY 17, 1937

Pagel Horton & Co. Inc., *Consul Olsson,* Sweden, 6,965 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING JULY 17, 1937

——, *Peter Maersk,* Shanghai, 400 bls. rags.
Castle & Overton, Inc., *Black Hawk,* Rotterdam, 250 bls. wood pulp, 50 tons.
International Purchasing Co., *Black Hawk,* Rotterdam, 122 coils old rope.
International Purchasing Co., *Black Hawk,* Antwerp, 45 coils old rope.
——, *Black Hawk,* Antwerp, 29 bls. cotton waste, 50 bls. rags.
Irving Trust Co., *Black Hawk,* Antwerp, 54 bls. bagging.
Atkinson Haserick & Co., *Pr. van Buren,* Genoa, 23 cs. paper.
Gottesman & Co. Inc., *Toronto,* Sweden, 3,000 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING JULY 17, 1937

Neidich Process Co., *Scanyork,* Helsingfors, 130 bbls. paper.
Jay Madden Corp., *Scanyork,* Wiborg, 50 bls. wood pulp

boards, 8 tons.
Jay Madden Corp., *Scanyork,* Kotka, 525 bls. wood pulp boards, 104 tons.
Lagerloef Trading Co., *Scanyork,* Kotka, 150 bls. sulphate, 30 tons.
———, *Peter Maersk,* Kobe, 150 bls. rags.
Chase National Bank, *Peter Maersk,* Yokohama, 200 bls. rags.
E. J. Keller Co. Inc., *Black Condor,* ———, 217 bls. rags.
———, *Black Condor,* Rotterdam, 54 bls. wrapping paper.
J. M. Hagy Waste Works, *Black Condor,* Rotterdam, 45 bls.
Chase National Bank, *Black Condor,* Rotterdam, 26 bls. rags.
Castle & Overton, Inc., *Black Condor,* 173 bls. rags.
E. J. Keller Co. Inc., *Sonnavind,* ———, 200 bls. rags.
E. J. Keller Co. Inc., *Vincent,* ———, 40 bls. rags.
J. F. Keene, Inc., *Vincent,* Havre, 105 bls. rags.
Continental Bank Trust Co., *Vincent,* Havre, 66 bls. rags.
Ayres W. C. Jones Co., *Vincent,* Havre, 40 bls. thread waste.
American Express Co., *Vincent,* Dunkirk, 96 bls. paper stock.
Philadelphia Inquirer Co., *Rydboholm,* Hallstavik, 500 rolls newsprint.
Guaranty Trust Co., *Rydboholm,* Gothenburg, 139 bls., 674 rolls wrapping paper.
H. Fuchs & Son, *Rydboholm,* Gothenburg, 13 pkgs. wood pulp boards.
Johaneson Wales & Sparre, Inc., *Rydboholm,* Gothenburg, 350 bls. sulphate pulp.
Perkins Goodwin & Co. *Rydboholm,* Gothenburg, 1,076 bls. sulphate pulp.
Gottesman & Co. Inc., *Rydboholm,* Gothenburg, 2,150 bls. sulphite pulp.
———, *McKeesport,* Hamburg, 8 bls. rags, 55 rolls wrapping paper.
———, *McKeesport,* Leith, 118 bls. bagging.
———, *Barbarigo,* Trieste, 1,954 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING JULY 17, 1937

Congoleum Nairn Co., *Exchester,* Marseilles, 23 bls. rags.
———, *McKeesport,* London, 23 bls. paper stock.
Gottesman & Co. Inc., *Malaren,* Sweden, 6,650 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING JULY 17, 1937

———, *Peter Maersk,* Kobe, 800 bls. bagging.
Banco Coml. Italiane Trust Co., *Peter Maersk,* Kobe, 200 bls. bagging.
Gottesman & Co. Inc., *Svaneholm,* Sweden, 7,900 bls. pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING JULY 17, 1937

Gottesman & Co. Inc., *Malaren,* Sweden, 500 bls. wood pulp.

NEW ORLEANS IMPORTS

WEEK ENDING JULY 17, 1937

Bank of The Manhattan Trust Co., *Vigrid,* Gdynia, 1,050 bls. wood pulp, 104 tons.

MONTREAL IMPORTS

WEEK ENDING JULY 17, 1937

Pagel Horton & Co. Inc., *Tropic Star,* Sweden, 16,192 bls. wood pulp.
Gottesman & Co. Inc., *Tropic Star,* Sweden, 3,600 bls. wood pulp.

Brown Co. Employees Get Raise

MANCHESTER, N. H., July 19, 1937.—Employees of the Brown Company, Berlin, N. H., have been given an increase in hourly wages of five per cent, effective July 11. The base rate is now 55 cents an hour. There are 3,000 workers.

Limitorque Control

The Philadelphia Gear Works has just compiled a catalogue entitled "Limitorque Automatic Valve Control". By means of pictorial representations and appropriate explanatory notes, the forty-eight page pamphlet presents a clear analysis of the wide use and importance of Limitorque control.

To Help Prevent Silicosis

To combat the dreaded industrial lung disease known as silicosis, which has been receiving so much attention recently from health officials, insurance companies, and employers, and which is caused by dusts, fumes, mists and gases in industrial plants, United States Rubber Products, Inc., 1790 Broadway, New York, N. Y., has designed new blower and dust suction hoses to meet practically every known conveying condition.

Dust Hose—Official P-5508 (for abrasives) is designed for either suction or light pressure, such as that generated by a blower. It will successfully withstand the abrasive action set up in the conveyance of various abrasive types of particles. The carcass of the hose is supported by a steel wire helix and is as light as is consistent with long-wearing qualities. It is finished with outide corrugations to lend flexibility and is available in three thicknesses of pure gum tube. The thickness is dependent upon the abrasive nature of the material being conveyed. Dust Conveying Hose is made in sizes of 2, 3, 4, 5, 6, 8, 10, and 12 inches.

Blower Hose (for fumes only)—Official P-5509 is similar to the Dust Conveying Hose with respect to carcass construction and wire reinforcement. Because it is offered for blowing service where mainly fumes or gases are conducted and is not designed for conducting abrasives, a lighter construction and a compounded tube are employed. Sizes range from 2 to 12 inches.

These hoses, which were built to fill a need in every plant and factory where dust and fumes are a problem, are light and efficient, it is claimed. Flexibility is built in to allow for short turns.

Tomahawk To Start Aug. 1

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 19, 1937—Operations will be started about August 1 by the Tomahawk Pulp Company, Tomahawk, Wis., with a crew of about 75 men.

Incorporators of the company are K. S. Dickinson of Appleton, Wis., who is president of the company, F. P. Dickinson and E. R. Honkamp, also of Appleton. Articles call for 1,000 shares of common stock of no par value.

The company has taken over the pulp mill of the former Tomahawk Pulp and Paper Company at King's Dam on a long term lease. It was closed down two and a half years ago when it went into receivership. The plant is being reconditioned, and some new equipment will be installed.

I. J. Stoller Goes With Corroflex

Irving J. Stoller will become the New England representative for the Corroflex Division of the Sherman Paper Products Corporation, Newton Upper Falls, after August 1.

Mr. Stoller's resignation from his present position as advertising and sales promotion manager for the Mid-States Gummed Paper Company, Chicago, becomes effective July 27. He will make his home in Boston.

Corroflex is the new flexible corrugated wrapper that makes a complete protective package in itself.

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551 Fifth Avenue, New York City

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EXCELSIOR FELTS

and minimize this trouble. Made by the Knox Woolen Co., of Camden, Maine, since 1864.

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Bismark Brown 2 RX is tinctorially a strong Basic Color. It is extensively used to produce browns and tans and as a dulling agent for the brighter Acid, Basic and Direct colors in both sized and unsized papers. Its excellent solubility makes it well suited for both beater and calender coloring. It finds its greatest use in coloring kraft, poster, tissue, wrapping and boxboard.

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Vanaffärden, Sweden
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Munksund, Sweden
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Bleached Sulphite
KELLNER-PARRINGTON PAPER PULP CO., LTD.
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Edsvalla, Sweden
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Unbleached Sulphite
AKTIESELSKABET GREAKER CELLULOSEFABRIK
Greaker, Norway
BERGVIK OCH ALA NYA AKTIEBOLAG
Söderhamn, Sweden
CELLULOSEFABRIKS A.-G.
Bratislava, Czecho-Slovakei
SVANÖ AKTIEBOLAG
Svanö, Sweden

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, July 21, 1937.

The paper industry during the week was fairly active for the summer season. Newsprint moved in about the same volume as last week.

Bonds, ledgers, book and cover papers moved in moderate volume. In some quarters there was a considerable quantity of sales to printers; in others a smaller demand. Tissues continued fairly active. The kraft market averaged well for this season of the year. The somewhat increased business in box board was sustained, but the volume was only moderate. The box board trade looks for improvement. Specialties were in rather favorable demand.

Chemical Pulp

The market appears to be decidedly quieter for all kinds of imported chemical pulp, which might be due to arrival of important tonnage representing first open water shipments from Sweden, the seasonal slowing down of the paper and board mill operations, and the rather high quotations on European grades.

Mechanical Pulp

No particular change has taken place in this market. Although the demand for mechanical pulp is only fairly brisk, there appears to be no excess tonnage available, which sellers are anxious to move.

Old Rope and Bagging

The market for old rope is steady. Demand for both domestic and foreign old manila remains normal; small mixed rope is still quite inactive. The demand for scrap and gunny bagging conforms with the normal for the season.

Rags

Activity in the domestic market is rather slight, although the demand for old whites remains more substantial than the rag market in general. The market for roofing grades seems more encouraging. Prices are firm.

Waste Paper

Trading is quiet. The demand for better grades remains unchanged, with activity practically the same. The lower grades are yet inactive.

Twine

The twine market continued steady for most of the grades, with a considerable demand. Jute, sisal and hemp twines were in good demand. In polished cotton twine, business is reported less active. On this account, producers' prices have been lowered. It is stated that the fall in the price of raw cotton has been more than discounted.

World Wood Pulp Statistics

The United States Pulp Producers Association, 122 East 42 street, New York City, has just prepared its second edition of "World Wood Pulp Statistics." Through the use of carefully compiled charts and tables, the work presents an analysis of principal facts regarding the wood pulp industry throughout the world. Figures dealing solely with the United States cover about half of its ninety-two pages.

The Association is offering "World Wood Pulp Statistics" for limited distribution at $3.00 each; three to ten copies at $2.50 each and more than ten copies at $2.00 each.

W. J. Green Starts New Concern

W. J. Green has severed his connection with the E. J. Keller Company, Inc., as of July 17, thus terminating an association with Mr. Keller extending over a period of approximately twenty-nine years.

For the present, Mr. Green will conduct business as an individual, dealing in all grades of paper-making materials. W. F. Cahill, who has also been a member of the Keller Company for about fifteen years, will be associated with Mr. Green.

The office of W. J. Green is located at 175 Fifth avenue, New York City.

Fire Damages Schmidt & Ault Warehouse

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 17, 1937.—On Thursday of last week, a fire, the origin of which has not been determined, caused damage to thousands of tons of baled waste paper in the large metal warehouse of the Schmidt & Ault Company, Penn street and King's Mill road, York, Pa. The fire was discovered shortly after 6 o'clock in the morning, and workmen began fighting the flames until the arrival of the Spring Garden township fire department. All nearby companies responded but the fire had gained such headway that several companies from the city fire department had to be rushed to the scene.

E. R. Behrend Gets Honorary Degree

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 19, 1937.—During the week E. R. Behrend, president of Hammermill Paper Company was recipient of an honorary degree, bestowed on him by Thiel College at Greenville. Dr. Earl S. Rudisill, president of the college and members of Thiel College faculty, toured the plant of Hammermill Paper Company, after which the party of thirty-five were luncheon guests of President E. R. Behrend at his Glenhill farm home on Station Road.

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NON CLOGGING IMPELLERS
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HIGHER OPERATING EFFICIENCY
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S & W engineers are experienced in the design of wet machines for standard and special papers. S & W machines are making binders' board, leather board, insulating board, matrix board, press board, etc.—and under greatly varying conditions. All plans held in strict confidence. Consult S & W.

The SMITH & WINCHESTER MFG. Co.
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Pulp and Paper Mill Screens
Of Stainless Steel—Copper—Bronze—Monel—
Chemical Resisting Alloys
Perforations that are accurate in size
Any Metal Any Perforation

The Harrington & King PERFORATING Co.
5652 FILLMORE ST., CHICAGO, ILL. 114 LIBERTY ST., NEW YORK, N.Y.

FILTER EFFICIENCY

is an important factor in a smoothly-running paper mill. Take up the matter of filter installations, additions or repairs with our experienced engineers.

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Uniform Quality
Dependable Service
Special Types to Meet
Unusual Requirements

CASEIN COMPANY OF AMERICA, INC.
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Oldest and Largest Producers of Casein in America

TRIMBEY MACHINE WORKS
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Manufacturers of
WEIGHT REGULATORS
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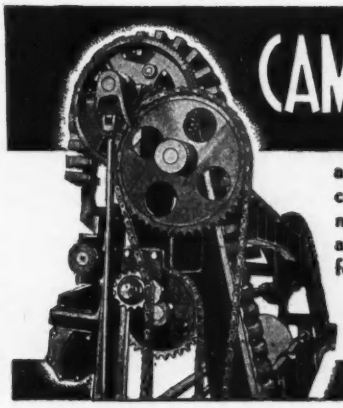

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are built as winders in connection with the paper machine or super calender and as rewinders and slitters for finishing room service

CAMERON MACHINE COMPANY
61 Poplar St., Brooklyn, N. Y.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, July 21, 1937.

BLANC FIXE—Prices in the blanc fixe market are generally holding to formerly quoted levels. The pulp is quoted at from $42.50 to $45 per ton in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—Conditions in the bleaching powder market are improving slightly. The contract movement is normal and prices are generally maintained at former levels. Bleaching powder is offered at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The casein market is somewhat less active. Domestic standard ground casein is now quoted at from 13 to 14 cents per pound; while domestic finely ground casein is selling at from 13½ to 14½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA—Trading in the local caustic soda market is fairly satisfactory. Contract shipments are normal. Solid caustic soda is quoted at from $2.55 to $2.60; while the flake and ground are selling at from $2.85 to $3 per 100 pounds, in drums, at works.

CHINA CLAY—The china clay market is seasonally quiet. Contract shipments are moving normally. Imported china clay is quoted at from $15 to $21 per ton, ship side; while domestic paper making clay is selling at from $6.50 to $12 per ton, at works.

CHLORINE—Business in the chlorine market is holding up and the contract movement is about normal. Prices are generally maintained at formerly quoted levels. Chlorine is quoted at from $2.15 to $2.25 per 100 pounds, in tank cars at works.

ROSIN—Prices in the rosin market are slightly changed. Paper making gum rosin is quoted at $7.80 and wood rosin at $7.90 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $3.65 per 100 pounds, in tank cars, at works.

SALT CAKE—Demand for salt cake is still persistent. Prices are steady to firm. Salt cake is quoted at from $12 to $13; chrome salt cake at from $11 to $12 per ton, at works; while imported salt cake is selling at from $12 to $13 per ton, ship side.

SODA ASH—The soda ash market is fairly active. Demand from the paper mills is moderately insistent. Prices are well maintained. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH—Paper mill demand for starch is normal and the contract movement is regular. Prices are now steady and unchanged. Special paper making starch is quoted at $4 per 100 pounds, in bags; and at $4.27 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA—The sulphate of alumina market is stronger. Contract shipments are moving in good volume. Commercial grades are quoted at from $1.25 to $1.60; while iron free is selling at from $2 to $2.25 per 100 pounds, in barrels, at works.

SULPHUR—The sulphur market is steady. Yearly contracts are quoted at $18 per long ton on orders of 1,000 tons, or over. On spot and nearby car loads the quotations are $21 per ton. All quotations are in car lots, at works.

TALC—Offerings of talc are moving into consumption in moderate volume. In most instances prices are holding to schedule. Domestic talc is quoted at from $15 to $18 per ton, eastern mines; while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

Tissues—Per Ream—

White No. 1	1.10	@	—
White No. 1 M. G.	1.07½	@	—
White No. 1½	.77½	@	—
White No. 2	.75	@	—
Anti-Tarnish M. G.	.77½	@	—
Colored	.90	@	—
Kraft	.77½	@	—
Manila	.75	@	—
Unbleached Toilet.	2.60	@	3.30
Bleached Toilet	3.94	@	5.26

Paper Towels—

Unbleached	2.10	@	3.35
Bleached	3.30	@	3.70

Manila—

No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00

Fibre Papers—

No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75

(Delivered New York)

News, per ton—

Roll, contract	42.50	@	—
Sheets	47.50	@	—

Kraft—

No. 1 Northern	5.25	@	5.75
Standard	5.00	@	—
Southern	5.00	@	—
Glazed	4.50	@	—
Striped	4.75	@	—

Boards, per ton—

News	47.50	@	—
Chip	45.00	@	—
Sgl. Mla. Lt. Chip.	55.00	@	—
Jute Lined Chip	55.00	@	—
Kraft Liners	65.00	@	—
White Pat. Coated.	67.50	@	—
Binders Boards	75.00	@	80.00

The following are representative of distributors' resale prices:—

Rag Content Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1.	$41.40	@$48.50	$42.55	@$50.00
100% Rag	32.80	@ 38.50	33.95	@ 39.75
85% Rag			32.20	@ 37.75
75% Rag	24.75	@ 29.00	25.90	@ 30.50
65% Rag	21.65	@ 26.25	22.80	@ 27.75
50% Rag	18.70	@ 22.75	19.90	@ 24.25
25% Rag	15.80	@ 19.25	16.95	@ 20.75

Regular Colors @ $1.50 cwt. extra.
Heavy Colors @ $3.00 cwt. extra

Sulphite Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$9.35	@$11.50	$10.55	@$12.75
No. 2	8.50	@ 10.25	9.65	@ 11.75
No. 4	7.60	@ 9.25	8.80	@ 10.75

Regular Colors @ $1.50 cwt. extra.
Heavy Colors @ $3.00 cwt. extra.

Free Sheet Book Papers—
White, Cased Paper,
Delivered in Zone 1:

No. 1 Glossy Coated	$12.45	@	$14.25
No. 2 Glossy Coated	10.80	@	12.25
No. 3 Glossy Coated	9.65	@	11.00
No. 4 Glossy Coated	9.05	@	10.50
No. 1 Antique (watermarked)	9.05	@	10.50
No. 2 Offset	8.35	@	9.50
A Grade E. F.	8.20	@	9.50
A Grade S. & S. C.	8.45	@	9.75
B Grade E. F.	7.60	@	8.75
B Grade S. & S. C.	7.85	@	9.00
C Grade E. F.	7.30	@	8.50
C Grade S. & S. C.	7.55	@	8.75
D Grade E. F.	7.00	@	8.25
D Grade S. & S. C.	7.25	@	8.50

Ivory & India at $.50 cwt. extra.

No. 3 White Linens	4.50	@	5.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—

Moist	35.00	@	36.00
Dry	40.00	@	42.00

(Delivered)

No. 1 Domestic and Canadian	36.00	@	37.50

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—

Prime Bleached Sulphite	3.25	@	4.65
Prime Qualities—Easy-Bleaching Sulphite	3.50	@	4.00
Strong Unbleached Sulphite	3.25	@	3.65

(On Dock, Atlantic Ports)

Kraft Bleached	4.00	@	4.75
Kraft Light & Strong	3.00	@	3.75
Kraft No. 1	2.90	@	3.65
Kraft No. 2	2.50	@	2.75

(F.o.b. Pulp Mill)

Kraft Domestic	2.75	@	3.25

(Delivered)

Soda Bleached	3.15	@	—

Add 60 cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—New White, No. 1	9.00	@	9.25
Silesias, No. 1	6.75	@	7.00
New Unbleached	9.25	@	9.50
Blue Overall	7.50	@	8.00
Fancy	3.75	@	4.25
Washables	3.00	@	3.50
Mixed Khaki Cuttings	4.25	@	4.50
O. D. Khaki Cuttings	4.75	@	5.00

Old Rags

White, No. 1—Repacked	3.75	@	4.25
Miscellaneous	3.00	@	3.25
White, No. 2—Repacked	2.60	@	2.85
Miscellaneous	2.00	@	2.25
Thirds and Blues—Repacked	2.00	@	2.25
Miscellaneous	1.90	@	2.00
Roofing Rags—No. 1	Nominal		
No. 2	1.10	@	1.20
No. 3 (bagging)	.90	@	1.00
No. 4	.90	@	1.00
No. 5A	.75	@	.85

Foreign Rags

New Rags

New Dark Cuttings	Nominal
New Mixed Cuttings	Nominal
New Light Silesias	Nominal
Light Flannelettes	Nominal
New White Cuttings	Nominal
New Light Oxfords	Nominal
New Light Prints	Nominal

Old Rags

No. 1 White Linens	Nominal
No. 2 White Linens	Nominal
No. 3 White Linens	Nominal